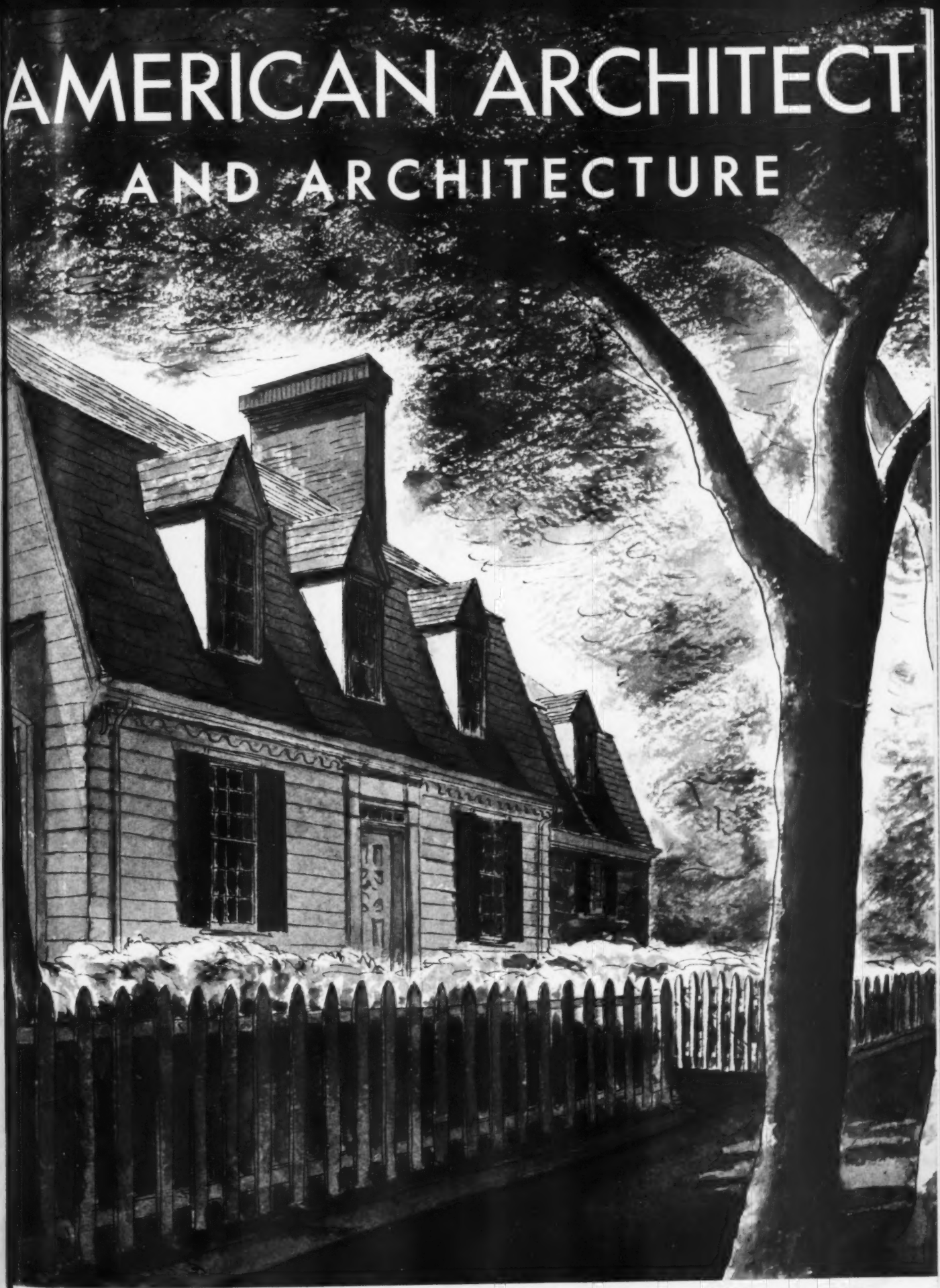
AMERICAN ARCHITECT
AND ARCHITECTURE



MAY 1937 • RECENT DOMESTIC ARCHITECTURE IN THE UNITED STATES

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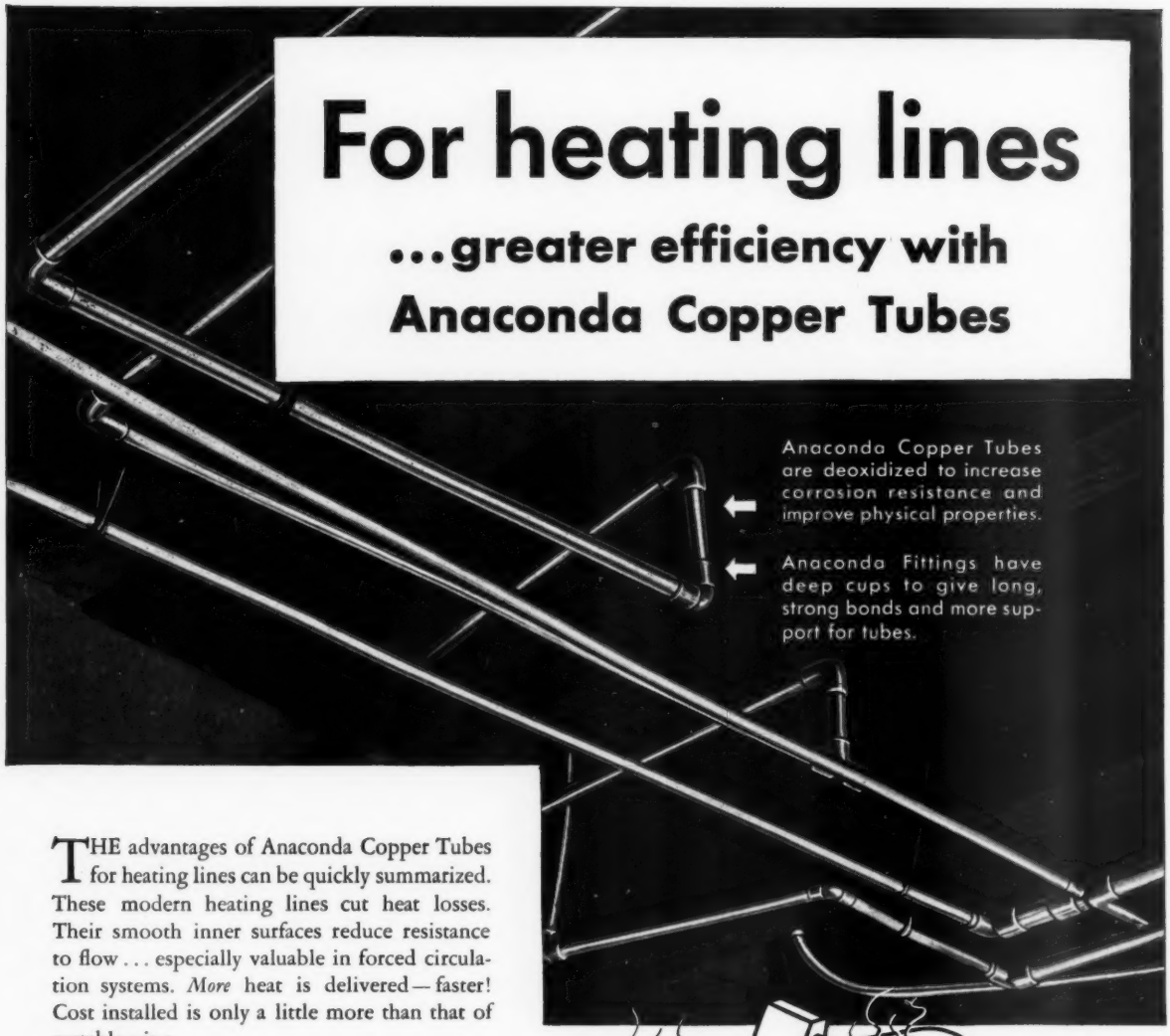
For heating lines

...greater efficiency with Anaconda Copper Tubes


Anaconda Copper Tubes are deoxidized to increase corrosion resistance and improve physical properties.
Anaconda Fittings have deep cups to give long, strong bonds and more support for tubes.

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Heat losses cut down!
Circulation speeded up!
More heat—faster!

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Anaconda DEOXIDIZED *Copper Tubes*

THE AMERICAN BRASS COMPANY · GENERAL OFFICES: WATERBURY, CONNECTICUT

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BOILER-AIRCONDITIONER

4 Big Benefits

FITZGIBBONS BOILER-AIR CONDITIONERS

● **AIR CONDITIONING.** Here is the most practical type of air conditioning for the average home of small or medium size. The Fitzgibbons Boiler-Airconditioner *cleans, tempers* (keeps at even temperature) and *humidifies* the air, and *circulates* this thoroughly conditioned, healthful and refreshing air through those rooms which the owner wishes to have air-conditioned. This *selective* method is known as "Split-System" air conditioning.

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FOR FURTHER INFORMATION SEE OUR CATALOG IN SWEET'S

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BOILER-AIRCONDITIONER

American Architect and Architecture, published monthly by Hearst Magazines Inc., 572 Madison Avenue, New York, N. Y. $3.00 per year; Canada, $4.00; Foreign, $5.00. Entered as second class matter April 5th, 1926, at the Post Office at New York, N. Y., under the act of March 3rd, 1879. Issue 2657, dated May, 1937.

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WROUGHT IRON

Specified for hard-to-maintain services as result of "corrosion study"

Examples by··LA BEAUME & KLEIN··St. Louis Architects

(Above)
● In the Evangelical Church of the Messiah, Byers Genuine Wrought Iron Pipe was specified for main supply, hot and cold water lines.

(Left)
● Byers Genuine Wrought Iron Pipe was specified in St. Louis Maternity Hospital for main supply, hot and cold water lines, exposed and concealed waste lines, vents, and drains; also for heating supply and return lines.

(Right)
● Byers Genuine Wrought Iron Pipe was specified in Beaumont Medical Building for main supply, hot and cold water lines, exposed and concealed waste lines, vents, and drains.

● In planning new buildings, leading architects and engineers are using wrought iron for corrosive and hard-to-maintain services. Note the services where wrought iron is used in these three fine St. Louis buildings. This sound policy of specifying materials proved in service is in sharp contrast to the "accept-our-word-for-it" attitude of the sponsors of new pipe materials.

Permanently recorded in many architects' and engineers' experience is the longer life and greater economy of wrought iron. Furthermore, each architect's and each engineer's experience is multiplied hundreds of times by the experience of his colleagues and much of this data is recorded in our files.

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Send your request to our Division Offices, or write direct to our Engineering Service Department in Pittsburgh. Give location of building and state briefly the services involved. No obligation, of course. A.M. Byers Company, Est. 1864. Pittsburgh, Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston, Seattle, San Francisco.

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AMERICAN ARCHITECT
AND ARCHITECTURE

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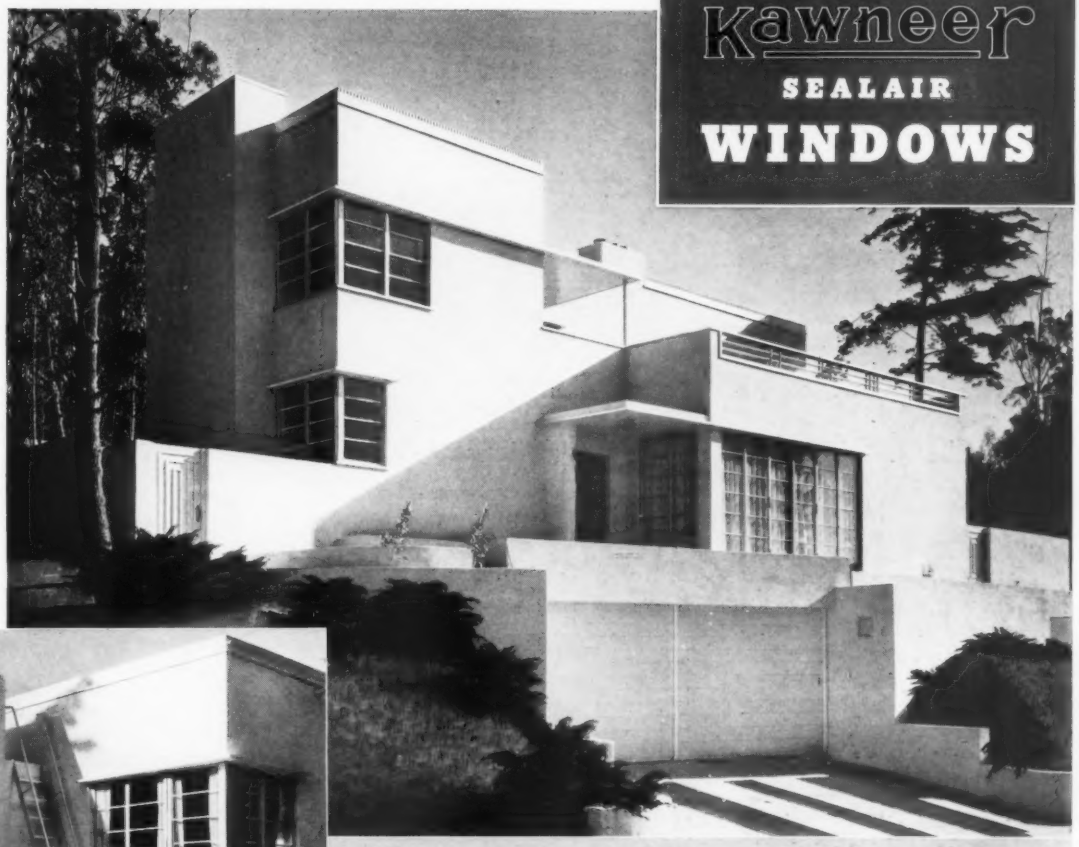
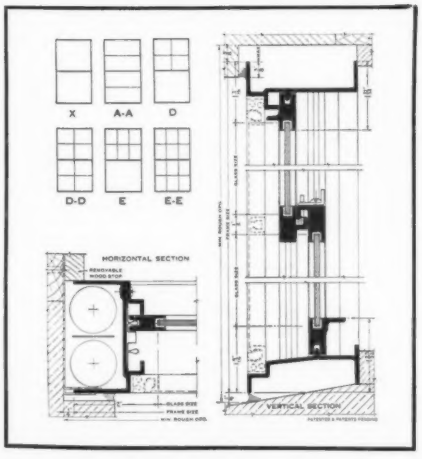


FURNISHED IN A VARIETY OF STANDARD MUNTIN ARRANGEMENTS — FOR EVERY TYPE OF HOME



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LEGISLATION

THE UNITED STATES IS, AFTER ALL, A FRIENDLY SORT OF PLACE. With few exceptions, it probably depends as much as any other corner of the world on the "neighborhood." Changes, even those for the better, frequently cause a nostalgia akin to the inevitable discovery that "things are not what they were when we were young." However, it is only when the wound touches an economic spot that we are prone to do anything about it; and it is just such a realization that lies behind the proposed legislation of the National Association of Real Estate Boards. More than two years of study and conference have led to the drafting of an Act designed to aid in solving one of the most difficult problems of present-day city growth and land use, that of stopping "blight."

As time goes by, many undesirable changes may crop up to change the character of a neighborhood. More important, they affect the security of home ownership, and the value of land, especially in home areas. Billboards, garages, and stores tend to discourage home owners. They move away as quickly as possible, and the result is a blight, threatening millions of invested wealth.

The suggested state Neighborhood Improvement Act would provide communities with a means of protecting themselves; it would also furnish them with an instrument which no present legal machinery provides, namely, a means for gradual elimination of uses that are undesirable in any area.

In a foreword to the Act, Herbert U. Nelson, Secretary of the National Association of Real Estate Boards, says, "The proposal for a Neighborhood Improvement Act seeks to attack this problem of blight at the most critical point. A neighborhood is an entity hard to define but easily understood. It is not too large to be beyond comprehension of the common man. Everyone is interested in his own neighborhood. The neighborhood must, therefore, be the unit upon which effective city planning is built."

Harland Bartholomew of St. Louis, city planning consultant to the National Association of Real Estate Boards, assisted in the formulation of the Act. Frank Watson, of Purdue University, in charge of Purdue's unique housing experiments, was the draftsman. The proposed plan would work through the usual and existing machinery of city government and city planning. Hence, it would correlate the neighborhood action and planning with the general framework of the city plan. In addition, it would open a way by which property owners might initiate action should the city through its present general machinery fail to act. Final power of determination is left with the city authority.

Principal provisions of the Act are:

1. It provides for the definition and bounding of neighborhood areas by the city planning body with the approval of the governing body of the city. As already noted, provision is also made for such definition and bounding by action of a sufficient percentage of the property owners within the area, in case the city planning body or the city's governing body fails or refuses to act.

2. It sets forth the machinery for the creation of a neighborhood plan, and machinery for official adoption of the plan.

A neighborhood plan as contemplated in the Act might provide for:

(a) Zoning or rezoning.
(b) Improvement and alteration of major and minor streets.
(c) Creation of parks, playgrounds, and public recreational facilities.
(d) Neighborhood planting and landscaping.
(e) Location of all public utilities.
(f) Building restrictions.
(g) Progressive elimination of non-conforming uses.

3. It provides for appeal to the courts by any property owner who thinks he is adversely affected.

4. It calls for execution of the plan on the same basis as if it were originally adopted by the city in a regular ordinance.

5. It gives legal status to neighborhood associations which may be organized enables property owners to deal as a unit with the city authorities.

The National Association of Real Estate Boards has placed copies of the plan in the hands of member boards over the country for study and action. In Missouri a bill embodying the plan has already been introduced and similar action is under way in several other states.

—ENCOMIUM—
Our Highest Praise To
WALTER GROPIUS

Because, he has helped to untangle a world of thought in which creative ability and manufacturing efficiency have been revolving in separate spheres, caring little and knowing less about each other.

. . . . . application of his theory that, "the essential factor in architectural education is the unity of its entire structure in all stages of development," has withstood the test of practical application.

. . . . . his expressed feeling that it is our obligation to work not only for our own good, but to help clear the road for future generations, indicates an unselfish people.

. . . . . his work reflects the simplicity and directness that can result only from exhaustive knowledge and unhampered thinking.

. . . . . his influence will be felt in the development of many allied arts—particularly those of form—as well as in American Architecture.

GOVERNMENT

THE GOVERNMENT'S LATEST EXPERIMENT IN LOW COST HOUSING has led to the conclusion that *mud* is the material to use if you want a house that will last longer, be cooler in summer, warmer in winter, and much cheaper than the ordinary frame bungalow.

Seven mud houses were recently built under the supervision of Thomas Hibben, R. A., as part of the New Deal's community housing project at Gardendale, Ala. The cost of a "rammed earth" house is estimated at about three-fourths of that for a frame house of the same size. One of the greatest advantages comes from the fact that the usual building formula wherein materials account for about 70 per cent of the cost, is almost completely reversed. In this case, labor amounted to roughly 65 per cent of the cost, with materials only 35 per cent. The building process is simple, and the houses when finished resemble the adobe houses of the Southwest.

SECURITIES ISSUED BY FEDERAL AGENCIES or by organizations formed at the instance of the Federal Government have been increasing in number, value, and importance in recent years, and another group is about to make its appearance. The Federal Home Loan banks will announce soon an issue of debentures which will mark the first public financing for the twelve regional institutions devoted to sound and economical home financing. If expectations are realized, these banks will float debentures and bonds in growing amounts which may eventually rival the flotations of the Federal Land Banks.

John H. Fahey, chairman of the Federal Home Loan Bank Board, has provided a brief description of the nature and function of the twelve member banks. "It took years of debate," says Mr. Fahey, "before the country appreciated fully the necessity for the Federal Reserve System, and many conflicts of opinion had to be resolved before its creation was possible. It has taken an even longer

(*Continued on page* 10)

RESULTS!

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Who knows most about air conditioning? The logical answer is: those few companies which specialize entirely in this particular field . . . those companies to whom air conditioning is "bread and butter" business—not a side line. Such an organization is Clarage Fan.

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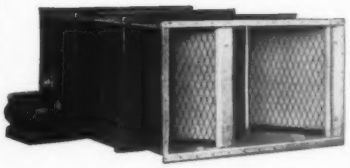

NEW!—MULTITHERMS

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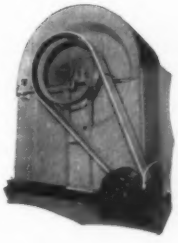

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SAYS James W. Kirst

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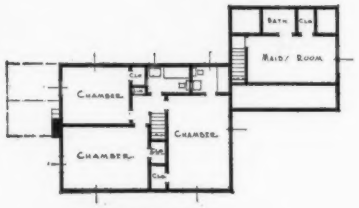
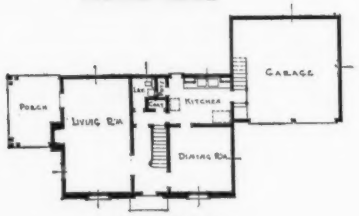


SECOND FLOOR



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(signed) James W. Kirst

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GENERAL ELECTRIC

RESEARCH KEEPS GENERAL ELECTRIC YEARS AHEAD!

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Belonging to the "Believe it or not" class are these pictures of the Palace of Versailles. The picture above is of the Palace illuminated by floodlighting, while that below is the same photograph with a montage daytime sky effect.

time for us to learn that sound financial and economic stability in the nation does not depend entirely upon a fully protected commercial banking system, but that it is equally important to provide adequate reserve facilities in the field of mortgage finance."

Under the law, the Federal Home Loan Banks constitute a true reserve system of home mortgage finance. The institutions do not lend money to individual borrowers, but only to such organizations as building and loan associations, co-operative banks, homestead associations, insurance companies, and savings banks. The use of funds is carefully controlled and directed toward the aim of constructing and improving small homes.

Operating to date entirely with funds supplied by the United States Treasury, the twelve banks have accomplished much toward organization of home mortgage financing machinery. Building and loan associations have been most ready to take advantage of the new facilities, and member institutions already number 3,780, with combined assets of more than $3,300,000,000. The twelve banks themselves, in slightly more than four years of operations have extended advances of $294,388,000, of which $152,697,000 has been repaid.

PRESTON DELANO, GOVERNOR OF THE FEDERAL HOME LOAN BANK SYSTEM, recently urged the elimination of tendencies toward boom psychology in the home-building industry and in home financing fields. His remarks that, "the nation needs a steady and progressive expansion of housing facilities, entirely separated from any thoughts of new boom—and depressions," were prompted by reports from every section of the country, indicating that this year would set a new home-building record.

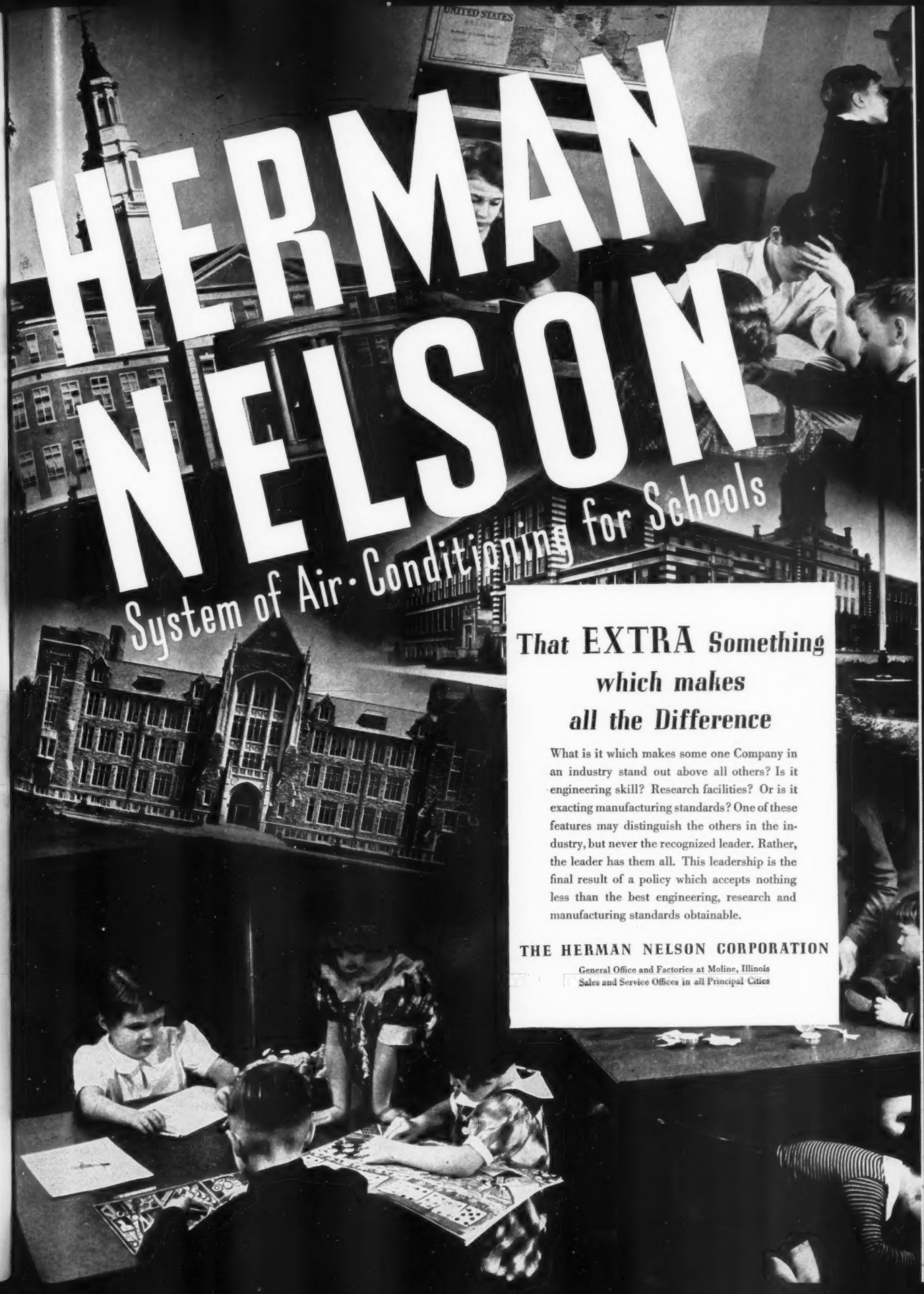
Presidents of the twelve regional FHL Banks report, that the demand for home financing is running anywhere from 50 to 400 per cent greater than it was a year ago.

CONSTRUCTION

WITH STRIKES TO THE RIGHT OF US, AND STRIKES TO THE LEFT OF US, it might be well to pause for a moment and consider the building trades. Mr. A. C. Shire, formerly chief engineer of the FHA, and technical editor of Architectural Forum, recently discussed one phase of this in the Annals of the American Academy of Social Science. He says of Labor: "The Federated Engineering Societies' study blames labor for 21 per cent of the waste in building. Daily wages are considerably higher, even for unskilled workers, than those in the manufacturing industries. Real wages, however, are not nearly so high as the daily wage, because of irregularity of employment. Strong labor organizations, effective in obtaining high wage scales, have also been effective in setting up practices which add considerably to the cost of building. . . . In many cases limitations on work have been carried to ridiculous extremes. Skilled men insist on doing work which could be done as well, and more economically, by their helpers or unskilled labor. Cases are not rare where it has been necessary to pay hoisting engineers from a quarter to a full day's wages for starting, occasionally oiling, and stopping a gasoline-driven pump. Electricians have been paid overtime for throwing a switch which turns on or off temporary lighting for a building operation. The limitations on the work which any one man can perform, while requiring the employment of more men, reduces the amount of work available to each man, and increases the uncertainty of employment. Realizing this, the men have no incentive to do good or speedy work. Men coming on the job require time to get 'the lay of the land', and work inefficiently until they are familiar with the particular building operation on hand."

It appears from this, and similar in-

XUM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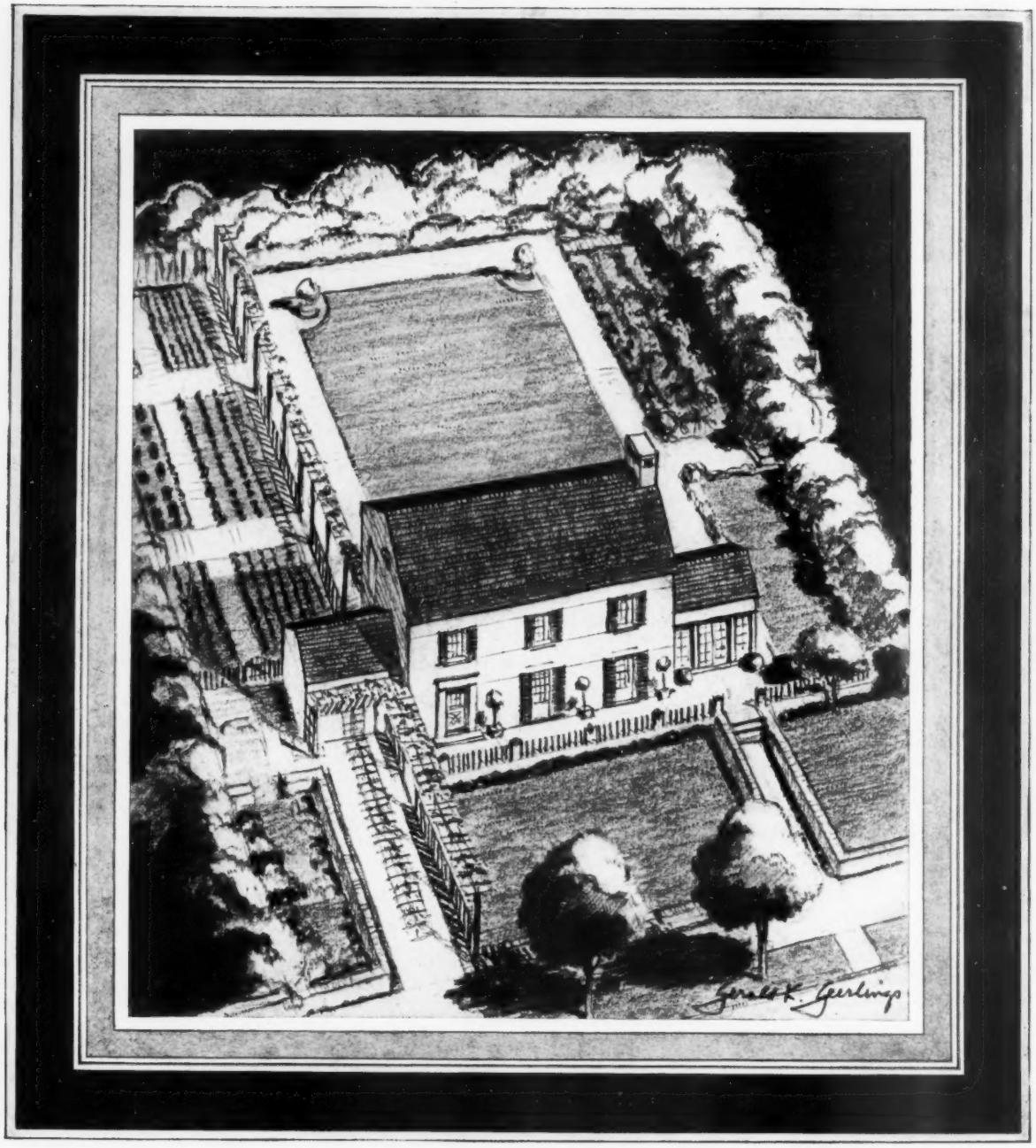
System of Air-Conditioning for Schools
That EXTRA Something which makes all the Difference
What is it which makes some one Company in an industry stand out above all others? Is it engineering skill? Research facilities? Or is it exacting manufacturing standards? One of these features may distinguish the others in the industry, but never the recognized leader. Rather, the leader has them all. This leadership is the final result of a policy which accepts nothing less than the best engineering, research and manufacturing standards obtainable.
THE HERMAN NELSON CORPORATION
General Office and Factories at Moline, Illinois
Sales and Service Offices in all Principal Cities



WORK-SAVERS

Each door and window should be given a number on the working drawings because it will save time in referring to any particular one in specifications, in details, and in correspondence after the job gets under way. If this is not done both the millwork and hardware schedules become wordy, indefinite and inefficient listings, causing no end of difficulty in checking the delivery of the items, and still more in seeing that each unit is fitted in its intended location. In allotting numbers it is advisable to start with the main entrance or one corner of the building, and then continue from room to room in a methodical manner.

GERALD K. GEERLINGS.

A SINGLE comprehensive perspective is usually more valuable to a client than a number of separate elevations. Even though it be sketchily presented such a drawing is well worth doing. As you know, a single comprehensive pencil is all-important to the architect and draftsman, for one which can draw light, thin lines, as well as black, heavy ones, is more valuable than a range of pencils which must be coaxed into action in order to produce a variety of values. The sketch above is a case in point, having been entirely drawn with a 2B Microtomic Van Dyke Pencil on tracing paper at the reproduced size. The Microtomic Pencils are graded in 18 degrees.

MICROTOMIC VAN DYKE PENCIL

EBERHARD FABER

WHERE YOU SPECIFY "JOINED BY WELDING"

YOU can be sure that your client will have a piping system that is permanently leakproof if you specify oxy-acetylene welding as the method for joining the pipe. Air conditioning ducts, also, can be made "jointless" by welding.

Oxy-acetylene welds have the full strength of the pipe or sheet metal. Welds take up less space than any other type of joint, look neater and involve no additional cost or time for construction. Pipe and ducts of all sizes and of any metal can be joined by the oxy-acetylene welding process.

Linde engineers, from their welding experience on many millions of feet of building pipe, have prepared technical data especially for those interested in designing and specifying "Piping Joined by Welding." Ask the Linde Office in your city for complete details before writing specifications. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and Principal Cities.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM PRODUCTS OF UNITS OF UCC UNION CARBIDE AND CARBON CORPORATION LINDE UNION CARBIDE

XUM

On the sidewalls of this House...

Beauty that never grows old!

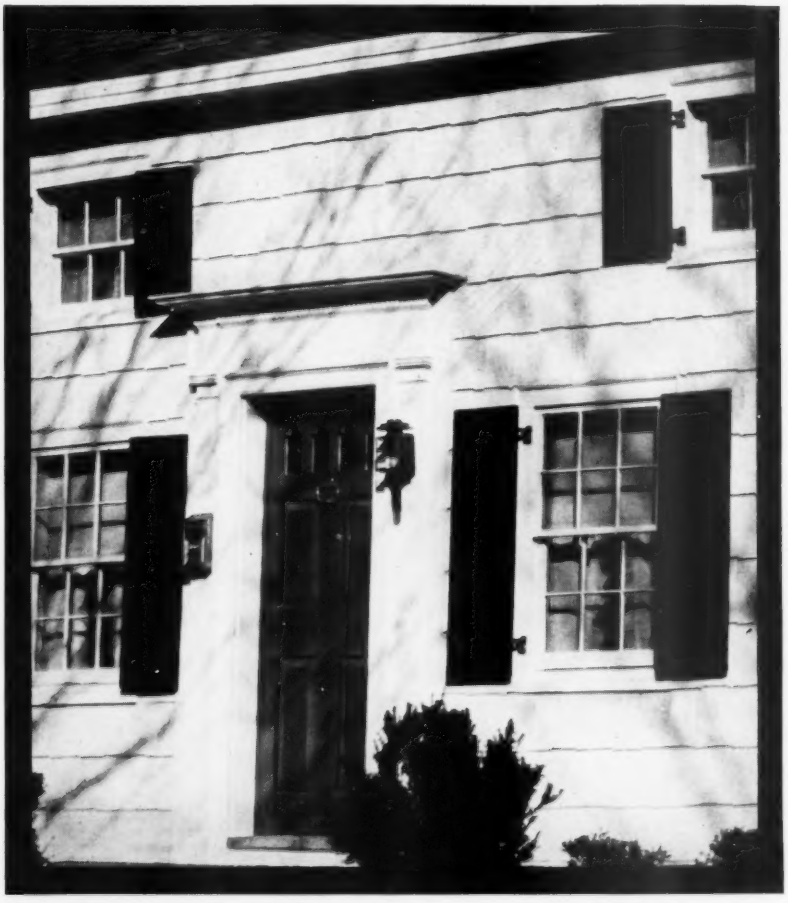
...the architect specified J-M "Shake" Textured Asbestos Shingles... fireproof, imperishable, and weather-resistant...

Not until you actually touch these Johns-Manville Asbestos Shingles, do you realize they are not made of wood. That's how faithfully they reproduce the charm and texture of old, hand-split "shakes"!

Johns-Manville has recaptured this traditional beauty in a modern material . . . asbestos-cement. By the very nature of this composition, J-M Asbestos Shingles cannot burn, rot or wear out, and they require no paint to preserve their lasting charm. Throughout the years, their virtual freedom from maintenance will prove an important factor in minimizing upkeep on this house.

If you wish detailed information about any Johns-Manville Building Materials, write Johns-Manville, 22 E. 40th Street, New York City.

★



GIVE YOUR CLIENTS THE ADVANTAGES OF TRIPLE INSULATION. The J-M Asbestos Shingles described above are one of the materials used in a Triple-Insulated House. This is a J-M development designed to permanently protect homes against fire, weather and wear. It assures owners of maximum all-weather comfort, minimum maintenance and fuel bills. Triple Insulation involves no new or untried methods. It is adaptable to any type of house design. Simply specify: J-M Asbestos Roofing and Siding Shingles; Ful-Thik Super Batts of J-M Rock Wool for insulating attics and sidewalls; J-M Steeltex, the reinforcing plaster base for walls and ceilings.

Johns-Manville

JM PRODUCTS

BUILDING MATERIALS

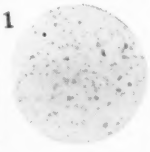
Asbestos Roofing and Siding Shingles • Decorative Asbestos Wall Boards • Insulating Boards • Home Insulation • Steeltex • Asphalt Tile Flooring, Acoustical Material, etc.

XUM

FOR *Colonial Exteriors* . . . paint experts advise *Eagle White Lead* protection!

Camera shows why EAGLE WHITE LEAD gives better protection . . .

1



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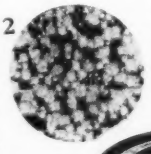


Pigment particles (1) actually "blossom out" when Eagle White Lead is mixed with linseed oil (2). This chemical union of lead and oil anchors deep in the surface it is applied to—sticks on like glue. It stays tough and elastic under the most brutal weathering doesn't crack or scale when surface expands or contracts.

This chemically active pigment gives an elastic paint film —doesn't crack or scale

It's a boom year for Colonial homes . . . and, as every architect knows, paint plays a major role in contributing a dignified charm to Colonial structures. It must be gleaming white . . . it must give weatherproof protection.

Eagle White Lead in oil meets these specifications perfectly. It is a chemically active pigment—often outwears other pigments by two or three years.

See—in photomicrographs—how pigment particles "blossom out" when mixed with linseed oil. The resulting white lead paint film anchors *deep in the wood*—and is *elastic*. It stretches with the wood as it expands and contracts . . . doesn't crack or scale. Eagle White Lead wears down by a gradual, even chalking—forms a perfect surface for repainting.

You can safely specify Eagle Pure White Lead for all wood exteriors—and for brick and stucco, too. It's also fine for washable flat or semi-gloss interiors.

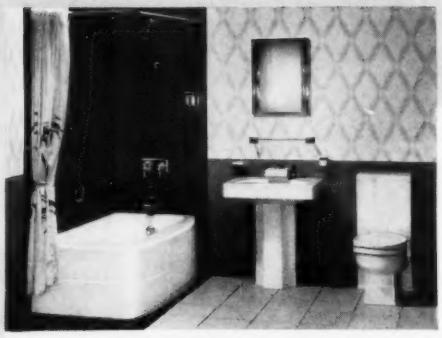
The Eagle-Picher Lead Company, Cincinnati, Ohio.

EAGLE EP PICHER

Eagle PURE *White Lead*

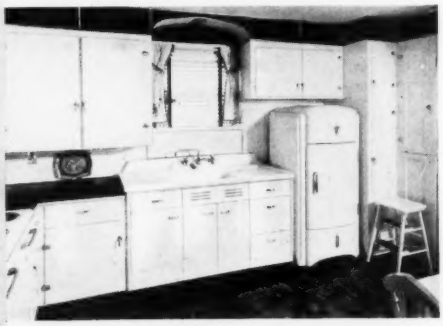
CHOICE OF GOOD PAINTERS SINCE 1843

XUM



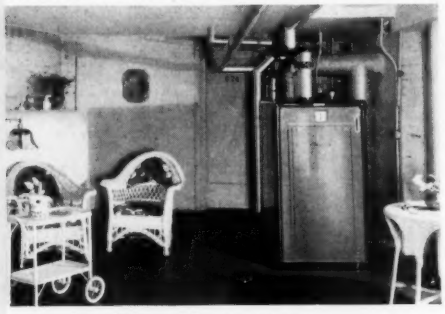
Crane Neuvogue Bathroom

Strikingly and beautifully modern—yet without any trace of "faddishness"—Neuvogue bathroom fixtures afford the very latest conveniences, plus enduring value because Crane builds every part of every product.



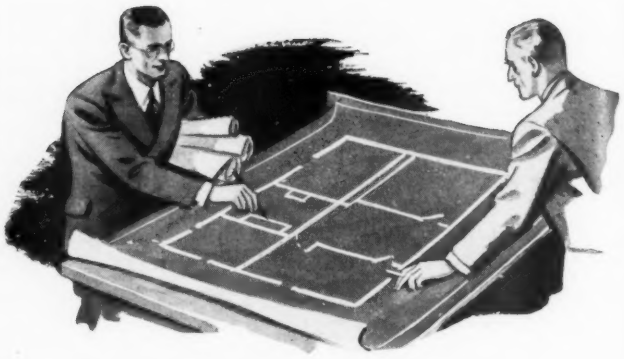
CranEfficient Kitchen

The sink is a Crane "Sunnyday"—scientifically designed to take the drudgery out of food preparation and dishwashing. Swinging spout. Depressed drainboards. Stemware drying ledge. Every feature that contributes to ease of use.



Crane Heating Systems

Seven types of Crane boilers for hot water, steam, vacuum and vapor heating—together with Crane Radiators—provide better heating efficiency for any structure.



CRANEQUIP

—to fit the need *exactly*

● On this page, you see an architect's recommendation of CranEquipment for a typical modern dwelling. Had his requirements been different—had he been planning another kind of house, an institutional or commercial building—Crane would have offered him exactly what he needed, too: bathroom styles and types for every kind of structure, at every price level. CranEfficient kitchens to fit individual conditions. Laundry equipment for the large or small home. Crane modern heating systems for every kind of fuel.

The widest possible choice—plus the assurance of Crane high quality in every product—is what the Crane Architect's Catalog offers you today. Crane kitchen, bathroom and laundry planning services are yours to command. Crane Display Rooms throughout the country make selection easy and accurate. CranEquip for *complete* satisfaction.

Crane has the world's largest and most complete line of valves and fittings. CranEquip *throughout* for satisfaction.

CRANE

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VALVES, FITTINGS, FABRICATED PIPE, PUMPS, PLUMBING AND HEATING MATERIAL

PRACTICAL BEAUTY PROVIDED BY *Insulux*

By combining strict practicality with rare architectural beauty, Insulux Glass Block abundantly fulfills the steadily increasing demand for greater simplicity, greater economy and greater usefulness in industrial, commercial, public and private buildings. For never before in the history of architecture have so many important constructional advantages and so many design possibilities been assembled in *one* building material.

The illustrations on this page show the adroit use of Insulux, in small areas, to achieve results that could not be attained with any other material . . . diffused light, privacy and arresting design. In addition, Insulux resists fire, defies weather, retards heat, requires no painting, is impervious to grease and odors and is easily cleaned. For details, turn to Section 3-30 of Sweet's Catalog File for 1937, or send the coupon. Owens-Illinois Glass Company, Toledo, Ohio.

Home in Orinda, Calif., designed by Fred Confer, Architect Berkeley, Calif.

OWENS-ILLINOIS *Insulux* GLASS BLOCK

Owens-Illinois Glass Company
Industrial and Structural Products Division
316 Madison Avenue, Toledo, Ohio

Please send me, without obligation, complete details about Insulux Glass Block.

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indications of labor inefficiency, that demands for shorter and still shorter working days are quite indefensible, particularly as they apply to the building trades.

From the standpoint of government or state control, New Dealer Donald Richberg has pointed out a closely related "vicious circle" that might reasonably follow such control. "You cannot," he said, "fix by law all wages of labor without fixing by law all prices of labor products. Then it will be necessary by law to restrict production so that it will conform to a consumption power which has been limited by law. When once we enter upon this circle of governmental responsibilities we will be forced step by step to submit our fortunes to the tyrannical control of an all powerful state."

TO MOST OBSERVERS, CONTEMPORARY MEXICAN ARCHITECTURE appears to be a renaissance of the great creative talent of the Aztecs who, before the Spanish Conquest, built pyramids and temples and palaces rivalling those of ancient Egypt. In spite of four hundred years of Spanish overlordship, these traditions have been kept alive in native handicraft and in folk-customs with only slight changes.

Truman S. Morgan and Thomas S. Holden, president and vice president of the F. W. Dodge Corporation, have found conditions there so interesting that they have devoted a major part of the current issue of Architectural Record to pictures and stories of the new Mexican architecture. The Corporation will also soon publish a book containing pictures and material collected during a nine months trip by Ernest and Esther Born.

The United States has heard of political revolutions in old Mexico, but very little has been heard of the revolution that has occurred in its building and architecture. The rococo Spanish Colonial architecture has given way to a style which Mr. Holden says has not been influenced by either European or North American precedent.

The modern movement in Mexican architecture is estimated to be about ten years old, and has thrived in spite of the opposition of the government and of traditional-minded architects. The leaders in the movement, inspired by the bold creative work of Diego Rivera in the field of mural painting, were Jose Villagren Garcia, Juan O'Gorman, and Juan Legarreta. Garcia, as professor in the National Academy, surrounded himself with a group of students who have subsequently distinguished themselves in contemporary architectural practice.

FOR THREE MONTHS ENDED MARCH 31st, the average price of real estate bond issues advanced 1.8 per cent, according to Amott-Baker Realty Bond Averages, based upon 200 selected issues of properties in New York, Buffalo, Boston, Philadelphia, Pittsburgh, and other Eastern cities. For March, however, a decline of 2.2 per cent was indicated, the first such decline since April, 1936, when the average price fell 2.5 per cent. During March, forty-seven of the issues increased in price, forty-nine remained unchanged, and 104 fell.

A NEW CEMENTING MATERIAL, containing magnesium oxychloride cements and 10 per cent of finely divided copper powder, has recently been reported by Dean S. Hubbell of the Mellon Institute of Industrial Research. The material, which resembles the natural mineral atacamite, promises wide utility in the building arts. The following excerpts from Dean Hubbell's report will indicate some of the many possible applications:

"The compositions are colored blue-green by the reaction of the copper. However, by suitable pigmentation, various other colors may be obtained. By forming a permanent bond to many other materials, this new metallic cement provides a much needed adhesive, enhanced by a high degree of resiliency. For purposes of providing a non-skid surface, coatings one-eighth to one-fourth of an inch thick were troweled onto a smooth concrete walk. The adhesion to the concrete and its resistance to damage by abrasion and water were demonstrated by the perfect condition of the walk after seven months of constant wetting, during which time more than 250,000 people walked over it. These same characteristics, plus the fact that the consistency of the mix can be adjusted for troweling, brushing, or spraying, makes the material suitable for use as stucco, as a coating for a wide variety of materials, including impregnated fiber boards, and as a paint for masonry of all kinds. This new material has also been useful in the manufacture of preformed articles, as pressed or cast floor and wall tiles, garden furniture, and statuary. Here its great strength allows small sections and fine detail to be employed."

HOUSING

THERE IS NO DOUBT THAT AS A PEOPLE WE ARE COMMITTED TO A POLICY ENCOURAGING HOME OWNERSHIP. There is also no doubt that, under existing conditions, the annual carrying charges for home ownership impose too heavy a burden for many responsible American families. Among the discussions centering around a solution to this problem, comes the following proposal from Herbert U. Nelson, Secretary of the National Association of Real Estate Boards. Its objective, of course, is to cut carrying costs:

"An agency might be created in one of the federal departments in which farmsteads, urban homes, and apartments owned co-operatively might, at the option of the owner or purchaser, be registered as federal homesteads, placing them thereby under such stipulation as might be deemed essential to conserve their value and their character as homesteads. To insure the whole plan, it is proposed that the registration involve the temporary transfer of title to the federal agency. The owner or purchaser would receive back a land contract embodying the needed stipulations, and would recover title to his homestead only at such time as the terms of the contract were fully completed. Registration should be open to all, up to a certain limit of value.

"The public interest being so safeguarded, registered homesteads might well be given these two conditions:

1. As to financing, they might be made eligible to mortgage loans up to 90% of the value of the property, and be given 36 to 40 years in which to pay off the mortgage. To make this possible, payments, as to both principal and interest, might well be guaranteed by the government, which has set up the original conditions of the land contract.

The rate of interest would be fixed at an appropriately low rate, which would vary, of course, with conditions. Under proper circumstances it might well be as low as 3 or 3½%.

2. As to tax payments, by agreement with the State and local governments the registered homesteads might be taxed no more than 1% of the appraised value in any one year."

All of which reminds us of a story.

It seems that a middle-western boy living in the East was being "ragged" by one of his friends for not having a girl. He tried to pass it off by saying that he couldn't find an Eastern girl he liked. Under pressure, however, he finally admitted that the real reason was because, "the Eastern girls lacked the brains that the girls back home had." After a moment's thought, his friend admitted that this might be true, but added that the only question in his mind was, "who judges the brains of the Western girls?"

Mr. Nelson's proposal leaves some *slight* question as to just what the government may do by the time it has carte blanche on our homes, as well as wages and working conditions.

THE AMERICAN INSTITUTE OF ARCHITECTS, in collaboration with the Federal Home Loan Board and the Federal Housing Administration, has developed a plan to enlist the nation's architects in meeting a housing shortage which, it is conservatively estimated, will involve an

(*Continued on page* 132)

XUM

Controlled-Cost Air Conditioning

wins enthusiastic acceptance

SPECIAL RESIDENTIAL BULLETIN

More and more evidence is piling up daily, pointing to forced warm air heating combined with winter air conditioning as the popular heating system for new homes.

The new Delco Conditionairs, in sizes to fit any house, meet this demand perfectly. *They air condition as they heat!* They use either gas or oil. They cost no more than automatic heat alone.

And cooling equipment for Summer Air Conditioning can be added either at the time of installation—or later, provided ducts are properly designed.

THE enthusiastic acceptance given Frigidaire Controlled-Cost Air Conditioning by architects everywhere is due not only to the technical excellence of the equipment itself but to the engineering soundness of the idea behind it.

Practically no two air conditioning jobs are exactly alike . . . either in the amount of cooling action or in the kinds and degrees of conditioning required.

Yet with Frigidaire Controlled-Cost Air Conditioning, you can specify equipment that will give the exact amount of cooling any job should have. You can specify any degree or kind of conditioning . . . from simple cooling to the most precise control of all atmospheric conditions.

And, perhaps most important of all, you can specify equipment to fit any and all types of construction.

You should have for your files complete details about this "Product of General Motors". Write to Delco-Frigidaire Conditioning Division, General Motors Sales Corp., Dayton, Ohio.

What Controlled-Cost Air Conditioning Means to Architects

It allows you to specify . . .

1. A system that gives the desired atmospheric conditions—your client pays *only* for what he needs.
2. Equipment of exactly the right size and capacity for your client—neither too small, which would mean unsatisfactory service; nor too large, which would be wasteful and costly.
3. A *method* of installation that suits any building—whether remodeled or new, owned or rented, therefore controlling the ultimate cost.
4. *More* cooling action with *less* current consumption. Hence a control over operating costs.
5. Dependable, *proven* equipment for low maintenance cost.

And gives you and your client a presentation of *all* the facts, so that you will know *and can therefore control* the entire cost.

It Pays to Talk to **DELCO-FRIGIDAIRE**

The Air Conditioning Division of General Motors

AUTOMATIC COOLING, HEATING AND CONDITIONING OF AIR

A theatre in Chicago, Ill., remodeled and made more attractive by the use of Pittco Store Front Products. Architect . . . B. Leo Steif.

HERE'S A *Complete line* OF PRODUCTS FOR STORE FRONT DESIGN

PITTCO Store Front Products lend themselves perfectly to the design and execution of outstanding, business-building store fronts. This is a complete line of store front products . . . all made by the same company . . . including every material needed in store front construction. All are of high quality, dependable, unusually good-looking and adaptable to original and effective treatments. They go together to form a unified, finished front . . . because they were originally designed to harmonize and supplement each other. In your store front work, take advantage of them. And send for our new booklet . . . "Producing Bigger Profits with Pittco Store Fronts." It contains complete information, interesting photographs of many installations and ideas which you can improve and develop for your own uses. Pittsburgh Plate Glass Company, 2193 Grant Building, Pittsburgh, Pa.

PITTCO STORE FRONTS
glass . . . metal . . . paint

THE Pittsburgh Plate Glass Company maintains a nation-wide system of branch offices and fully stocked warehouses, supplemented by thousands of dealers. We are therefore particularly well equipped to provide quality paint and glass products to meet the architect's specifications with utmost promptness and efficiency in any part of the country. We invite you to take advantage of this convenient source of supply.

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A complete line of Pittsburgh Products of the following types is available through our 74 branches in leading cities:

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Sun-Proof Paint
Wallhide Paint
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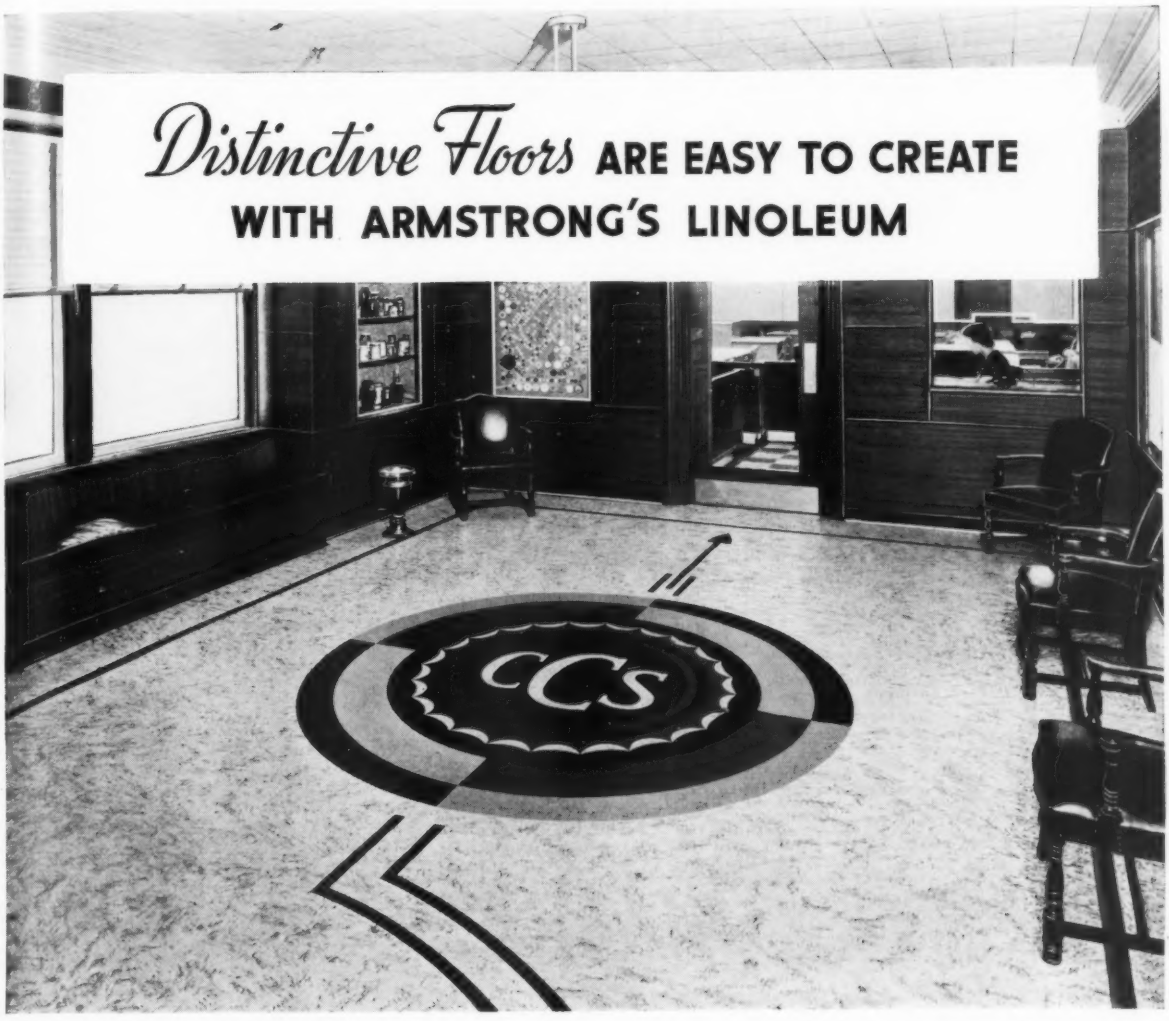
PITTCO STORE FRONT METAL

See Sweet's for complete specifications, and for addresses of Pittsburgh Plate Glass Company branches. Be sure to see the Pittco Store Front Caravan, now on a nation-wide tour. Contact our local branch for specific information as to when it will visit your territory.

Paint. PITTSBURGH. Glass
PLATE GLASS COMPANY



Distinctive Floors ARE EASY TO CREATE WITH ARMSTRONG'S LINOLEUM

Entrance Hall, Crown Cork & Seal Co., Baltimore, Md. Floor is Armstrong's Linoleum with field of No. 03 Marbelle and Linoset and feature strips of Red No. 40 and Yellow No. 48. Lucius R. White, Jr., Architect. Armstrong's Linotile and Corkoustic also were used in this building.

WHEN your plans call for floors that are different, Armstrong's Linoleum offers you complete freedom of design.

With this versatile floor material, you can give free rein to your creative ability. Any design you lay out on your drafting board can be faithfully reproduced in the floor. You can work with more than *fifty* colors in Armstrong's Plain, Jaspe, Raybelle, and Marbelle Linoleum. In addition, there are hundreds of standard patterns from which you may choose interesting floors.

Armstrong's Linoleum Floors provide all the practical advantages that clients demand—low installation cost, easy and economical maintenance, durability, and underfoot comfort and quiet.

Armstrong manufactures the only *complete* line of resilient floors, including—besides Linoleum—Linotile, Accotile, Cork Tile, and Reinforced Rubber Tile. As a result, Armstrong's Architectural Bureau is in a position to give you valuable, unbiased suggestions on the type of floor best suited to your plans. For full information, see your 1937 edition of *Sweet's* (Sec. 17, Catalog 54), or write for color-illustrated "Better Floors for Better Business." Armstrong Cork Products Company, Building Materials Division, 1201 State Street, Lancaster, Pa.

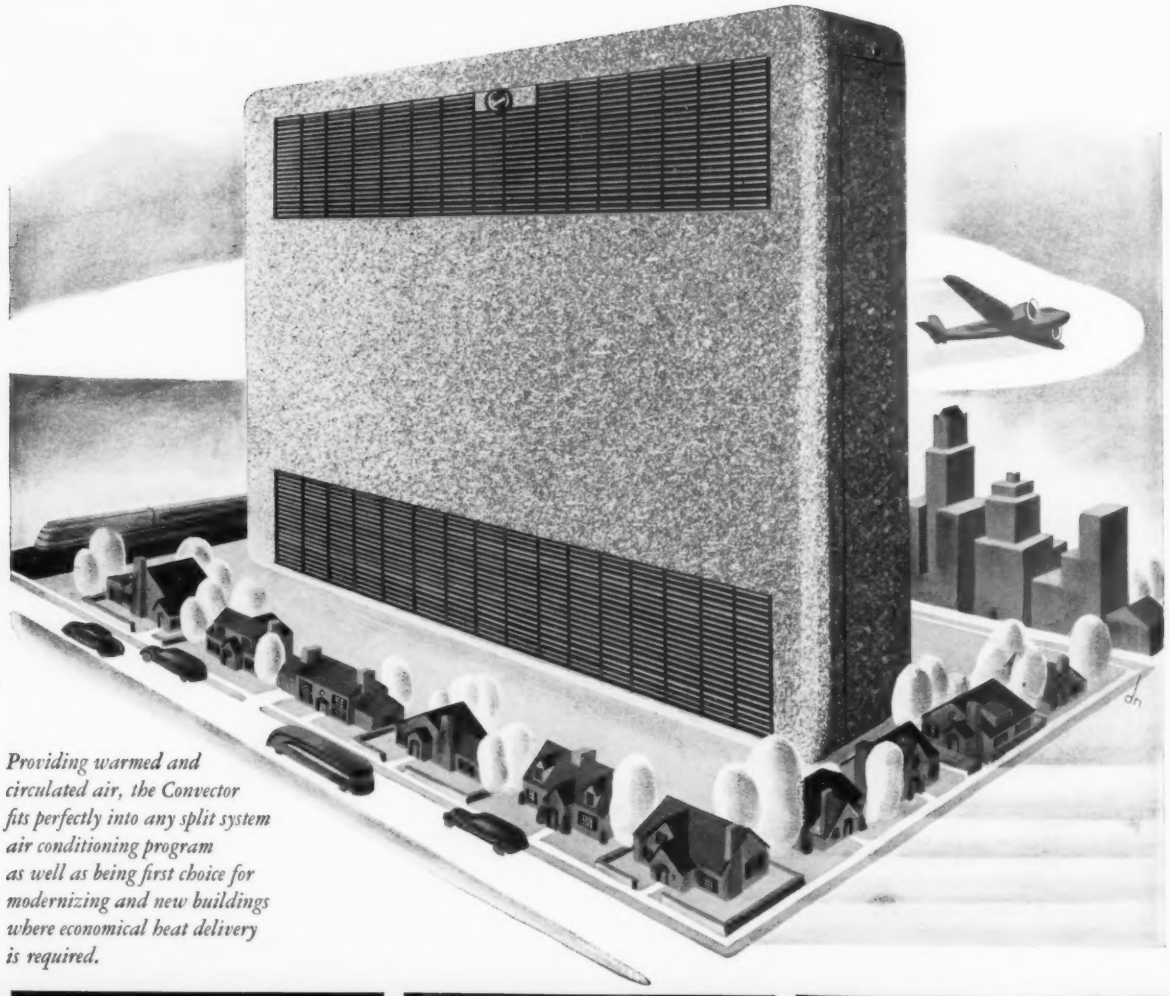
~ ~ ~

ARMSTRONG'S *Linoleum* *and* RESILIENT TILE FLOORS

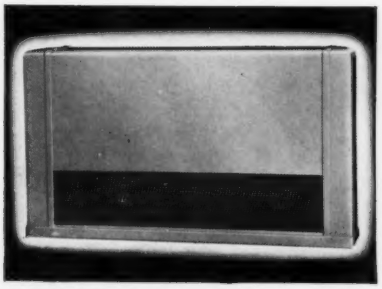
LINOTILE · ACCOTILE · CORK TILE · RUBBER TILE · LINOWALL · ACOUSTICAL CEILINGS

TRANE...

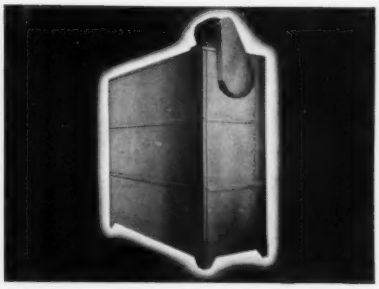
Pioneer of Five Phase



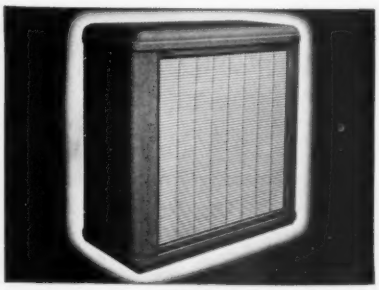
Providing warmed and circulated air, the Convector fits perfectly into any split system air conditioning program as well as being first choice for modernizing and new buildings where economical heat delivery is required.



☆ **HUMIDIFYING.** Illustrated above is the cabinet Humidifier used frequently in split air conditioning systems for residences and office buildings.



☆ **DEHUMIDIFYING.** Trane floor type self-contained air conditioner of large capacity used in many establishments to maintain correct humidity as well as for cooling in summer and supplying automatically controlled healthful heat in winter.



☆ **HEATING.** Factory heating took long strides forward in efficiency and economy when the famous Trane heating coil principle was incorporated in Unit Heaters.

Air Conditioning, Announces New Beauty in Convectors for 1937.

52,000 installations ago—Trane announced their first convector (in 1926). Each successive year has seen new improvements in economy and design that, accumulatively, are responsible for the Trane Convector being considered *the Standard in the field,* more units having been sold than any other.

NEW OPPORTUNITIES FOR ARCHITECTS AND ENGINEERS

1. A new beauty resulting from softened contours that permits a new freedom in harmonious decoration of any period.
2. In concealed form—an indispensable ally of the modern compact architectural design.
3. "Modern" heat delivery of natural air circulation that occupants recognize as heat at its most comfortable, healthful best.
4. Quick response heat—subject to instant control.
5. Bring greater cleanliness to wall surface and furnishings—easier to cleanse.
6. Increased economy in installation and operation.
7. New accessibility when interior cleaning or adjustment is required through the new one-piece top and front stamping.

HERE ARE THE FIVE VITAL PHASES OF AIR CONDITIONING that make *Trane Weather Magic*

1. *Heating* 2. *Cooling*
3. *Ventilating* 4. *Humidifying*
5. *Dehumidifying*

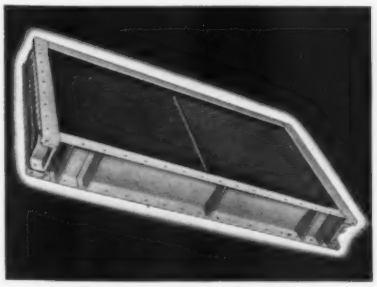
Major advancements in heating are not the only Trane contributions to *weather magic.* There have followed many achievements in the five related fields, which have made the Trane Company one of the outstanding factors in the field of air conditioning either for comfort or industry.

A competent field organization of technical advisers in 64 principal cities of the United States trained in each of the five phases of air conditioning and working constantly with the principal engineering consultants in the profession is at the disposal of any architect, engineer or contractor.

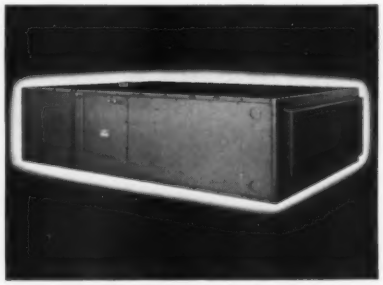
TRANE ★ ★ ★ ★ ★

THE TRANE COMPANY — LA CROSSE, WISCONSIN

Trane Company of Canada, Ltd., Toronto



☆ **COOLING.** Trane Coils for cooling have found hundreds of different applications among leading architects, contractors, and engineers. Complete range of sizes and types for all applications.



☆ **VENTILATING.** The Air-O-Vent provides a means of introducing fresh air for auditoriums and gymnasiums.

ARCHITECTURALLY SPEAKING

by

OTIS ELEVATOR COMPANY

WHAT has happened to Two-Speed AC? It has been superseded by UMV. Sounds like more alphabetical bureaus? Let us explain.

Two-Speed AC is elevator parlance for an elevator machine that operates directly from alternating current. Its versatility is limited to just two speeds. Its usefulness is restricted to slow speed, geared, single-wrap traction. Its maximum speed should not exceed 350 feet per minute. The service it gives is hardly up to today's standards.

UMV is short for Unit Multi-Voltage. Or, in plain words, an elevator with a direct-current motor that receives its power from an individual motor generator. This generator changes current —regardless of its characteristics—into ideal direct current for that motor. This new, modern, and more flexible equipment is available at a price comparable to the old Two-Speed AC.

More important, the Two-Speed AC machine now in use can usually be modernized to UMV *at reasonable cost*—because it is no longer necessary to scrap a large portion of that machine.

The *credits* from the change-over are: Smoother, faster, quieter service. Less wear and tear on the apparatus. Usually a nice saving in power consumption. Lower up-keep costs. The only *debit* is the moderate cost of the modernizing.

This is an important advance in elevatoring, because one of the big modernization problems has been the geared Two-Speed AC machine. And because more and more the available current supply, today, is alternating.

And by the way, the occasion will be rare indeed where modernizing to UMV will require more machine room than Two-Speed AC.

UMV opens the road to economical modernization possibilities. Many a building has Two-Speed AC that can (and should) be changed to UMV.

AMERICAN ARCHITECT
AND ARCHITECTURE

THIS MONTH

NEWS OF WALTER GROPIUS coming to Harvard gave additional emphasis to the fact that the United States is on the way to being the Mecca for architectural education. Naturally anything that Dr. Gropius has to say about training architectural students is significant but it is especially so in "Education Toward Creative Design," his first article written in America.

DOMESTIC ARCHITECTURE in so vast a country as ours is naturally extremely varied due to climatic conditions, local building materials and precedent. Eighteen houses in eighteen different states in every section of the United States give a clear picture of the trend in present day house design.

BOSTON because it will be the scene of the A.I.A. Convention in June, furnishes the subject for Architectural Overtones. The photographs, part of Samuel Chamberlain's collection for The American Scene, are sufficiently diversified in subject to give a feeling of the true Boston flavor.

BANKS are no longer designed in the image of Roman Baths. Clearest evidence of this is the new East River Savings Bank branch in Rockefeller Center, New York. Reinhard & Hofmeister were the architects.

THE THEME TOWER should set the pace for subsequent buildings at New York's 1939 World's Fair. This is a dramatic presentation of how a modern architectural office arrives at a fine solution to a difficult problem.

LIGHTING is constantly being studied and improved both as a utilitarian and as a decorative element of the home. Eugene W. Commery is one of the outstanding men in the home lighting field and his well illustrated article. Standards of Residential Lighting, is the last word on the subject.

NEXT MONTH

INNOVATIONS IN THE ARCHITECTURAL PUBLISHING FIELD are relatively rare. We feel that we have one in a 16-page section completely edited by a group of Boston architects. Every other month thereafter there will appear a similar section edited by a group of architects in a city or a section of the country, representing their viewpoint of what architectural editing should be.

INDIAN RESERVATIONS were once upon a time dotted with mediocre, ugly buildings. All this has changed. Today the Bureau of Indian Affairs is bending every effort to build schools, hospitals, etc., in the various tribal styles. Commissioner John Collier has written an article about the why and wherefore of this farsighted move. It is illustrated with some splendid work in southwest reservations designed by Mayers, Murray and Phillip, Architects.

HATCH'S DEPARTMENT STORE in West Palm Beach, Florida, is one of the finest in the country. It was done by John L. Volk, Architect.

THERE WILL ALSO BE a number of other stores and shops of various kinds and sizes.

XUM

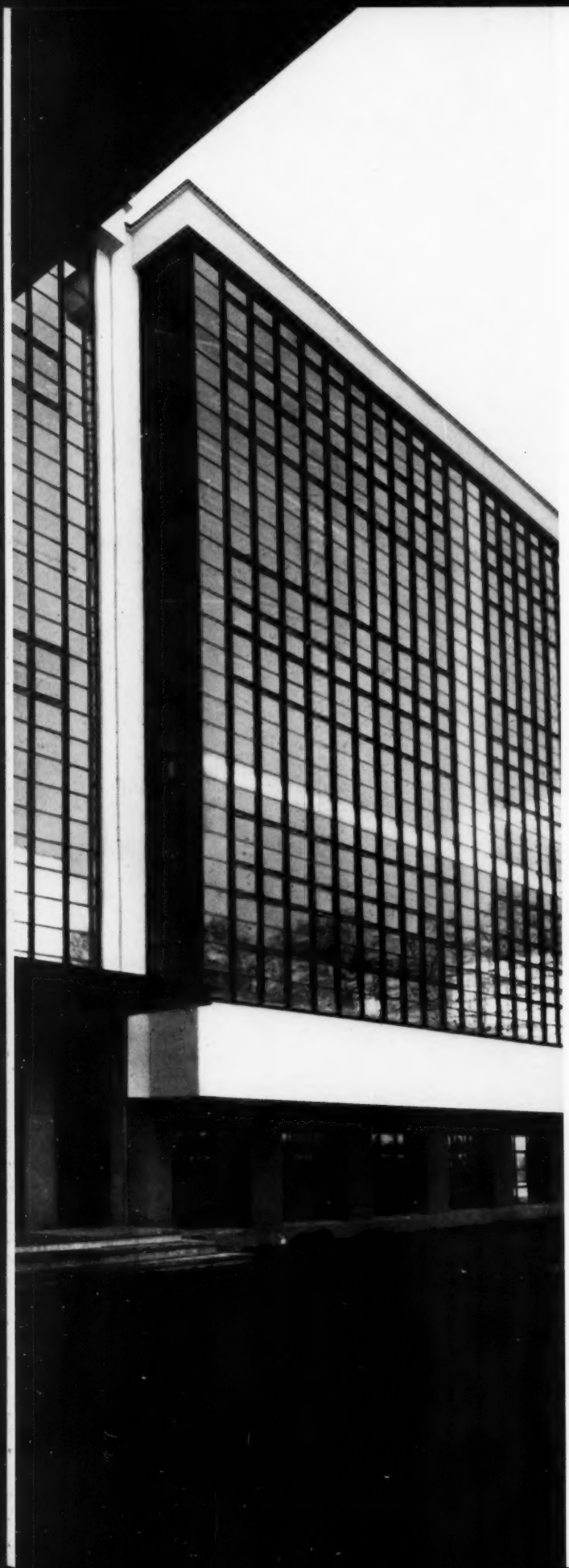


PHOTO: COURTESY MUSEUM OF MODERN ART

EDUCATION

BY WALTER GROPIUS

THE profound social revolution within the last generation, mainly caused by the invention and development of the machine, has cut off slow, genuine growth of creative art in all civilized countries. The succeeding gigantic struggle of coming to terms with the machine and getting it under control seems to have absorbed most of the vitality and creative power of these generations. The old conception of the basic unity of all art in its relation to life and to the social strata of the community was therefore lost and more and more replaced by that shallow aesthetic "art for art's sake" and the even more dangerous philosophy it sprang from: "business as an end in itself." The common attitude towards the arts turned, consequently, into a sentimental longing for historical forms by accepting aesthetic "ressentiment" and good taste as a substitute for creative art. This fatal obsession, still dominating the general feeling of our present generation, needs to be overcome before a true creative art, adopting the machine as the modern vehicle of form, may permeate again the community as a whole. Strong roots of this new art do already exist. They impose a duty to our generation of clearing the field for the next, so that it may find again the right conception of art by way of better education; but improving art education means starting from a clarified aspect as to what creative form is.

The demands which we impose on the expression—that is to say, the form of a thing—are of a purely spiritual nature. The form is not a product of the intellect, but of human desire, and is therefore closely associated with the individual, with the nation and with place and time. The history of art contains many examples which reflect the struggle between intellect and desire, even to the most absurd contradiction between purpose and shape. In our mechanical age, however, a new conception is beginning to make itself felt. Today we insist upon the form of a thing following the function of that thing, upon its creator's desire for expression following the same direction as the organic processes in nature, and not running counter to that direction. We insist upon harmony again being achieved between intellect and desire. We are once again striving towards unity in the cultural world around us, out of the boundless diversities in which the individual feels himself helpless and alone. The age just past, with its "isms" and its historical imitations was, perhaps, merely the reflection of our unconscious desire to probe the secrets of the whole visible world in order, in our longing for totality, to overlook nothing of importance in a new world.

The history of artistic education shows that in the middle ages a close contact existed between the artist and the working life of the people. Craftsmen and artists of all grades had a common training ground: the workshop. It was with the introduction of the academies that the world of production and the artist began slowly to drift apart. Meant in the beginning as a scholarly supplement for the work done in the so-called "State manufactures" of France—a forerunner of our modern factories—they gradually became isolated and their relationship to the

TOWARD CREATIVE DESIGN

life of the community as a whole ceased to exist. Unfettered by practical considerations, they withdrew the artist entirely from the workaday world and lulled him in a dream of genius, leaving him totally unequipped for the struggle of existence. His skill became merely a graphic and pictorial one and was therefore doomed to end in aesthetic speculation. Preoccupied with the making of the "genius," the Academy forced the majority of her pupils, who could not hold this highest rank, to become social drones. True national art, pulsating through every branch of human activity, gradually died.

WHEN, in the last century, the machine-made products seemed to sweep the world, leaving the craftsmen and artists in a bad plight, a natural reaction gradually set in against the abandonment of form and the submersion of quality. Ruskin and Morris were the first to set their faces against the tide, but their opposition against the machine could not stem the waters. It was only much later that the perplexed mind of those interested in the development of form realized that art and production can be reunited only by accepting the machine and subjugating it to the mind. "The Arts and Crafts" schools for "applied art" arose mainly in Germany, but most of them met the demand halfway only, as their training was too superficial and technically dilettantic to bring about a real advance. The manufactories still continued to turn out masses of ill-shaped goods while the artist struggled in vain to supply platonic designs. The trouble was that neither of them succeeded in penetrating far enough into the realm of the other to accomplish an effective fusion of both their endeavours.

The craftsman, on the other hand, with the passing of time began to show only a faint resemblance to the vigorous and independent representative of mediaeval culture who had been in full command of the whole production of his time and who had been a technician, an artist, and a merchant combined. His workshop turned into a shop, the working process slipped out of his hand and the craftsman became a merchant. The complete individual, bereaved of the creative part of his work, thus degenerated into a partial being. His ability to train and instruct his disciples began to vanish and the young apprentices gradually moved into factories. There they found themselves surrounded by a meaningless mechanization which blunted their creative instincts, and their pleasure in their own work; their inclination to learn disappeared rapidly.

What is the reason for this devitalizing process? What is the difference between handicraft and machine work? The difference between industry and handicraft is due far less to the different nature of the tools employed in each than to subdivision of labour in the one and undivided control by a single workman in the other. This compulsory restriction of personal initiative is the threatening cultural danger of the present-day form of industry. The only remedy is a completely changed attitude towards work, which arises from the sensible realization of the fact that the development of technique has shown how a collective form of labor can lead humanity to greater total efficiency than the autocratic labor of the isolated individual. This does not detract from the power and importance of personal effort; on the contrary, it enhances its utility by giving it the possibility of taking its proper place in the work of the whole. This attitude no longer perceives in the machine merely an economic means for dispensing with as many manual workers as possible and of depriving them of their livelihood, nor yet a means of imitating handwork; but, rather, an instrument which is to relieve man of the most oppressive physical labor and serve to strengthen his hand so as to enable him to give form to his creative impulse. The fact that we have not yet mastered the new means of production and, in consequence, still have to suffer from them, is not a valid argument against their necessity. The main problem will be to discover the most effective way of distributing the creative energies in the organization as a whole. The intelligent craftsman of the past will in future become responsible for the speculative preliminary work in the production of industrial goods. Instead of being forced into mechanical machine work, his abilities must be used for laboratory and modelling work and fused with the industry into a new working unit. At present the young artisan is, for economic reasons, forced either to descend to the level of a factory-hand in industry or to become an organ for carrying into effect the platonic ideas of others: i.e., of the artist-designer. In no case does he any longer solve a problem of his own setting. With the help of the artist he produces goods with merely decorative nuances of new taste which, although associated with a sense of quality, lack any deep-rooted progress in the structural development, born of a knowledge of the new means of production. What, then, must we do to give the rising generation a more promising approach to their future profession as designers, craftsmen, or architects? What training establishments must we create in order to be able to sift out the artistically-gifted person and fit him by extensive manual and mental training for independent creative work within the industrial production? Only in very isolated cases have training schools been established with the aim of turning out this new type of worker who is able to combine the qualities of an artist, a technician and a businessman. One of the attempts to regain contact with production and to train young students both for handwork and for machine work, and as designers at the same time, was made by the Bauhaus, that school of design which I founded in Germany in 1919. The Bauhaus aimed at the training of people possessing artistic talents as designers in industry and handicrafts, as sculptors, as painters and as architects. A complete coördinated training of all handicraft, in technique and in form, with the object of joint work in building, served as the basis. The fact that the man of today is, from the outset, left too much to traditional specialized training—which merely imparts to him a specialized knowledge, but does not make clear to him the meaning and purport of his work, nor the relationship in which he

stands to the world at large—was counteracted at the Bauhaus by putting at the beginning of its training not the "trade" but the "human being" in his natural readiness to grasp life as a whole. The basis of its training was a preliminary course, introducing the pupil to the experience of proportion and scale, rhythm, light, shade and colour, and allowing him at the same time to pass through every stage of primitive experience with materials and tools of all kinds—in order to enable him to find a place where, within the limits of his natural gifts, he could obtain a secure footing. This training, which occupied six months, was intended to develop and ripen intelligence, feeling and ideas, with the general object of evolving the "complete being" who, from his biological centre, could approach all things of life with instinctive certainty and would no longer be taken unawares by the rush and convulsion of our "Mechanical Age." The objection that, in this world of industrial economy, such a general training implies extravagance or a loss of time does not, to my mind and experience, hold good. On the contrary, I have been able to observe that it not only gave the pupil greater confidence; but also considerably enhanced the productiveness and speed of his subsequent specialized training. Only when an understanding of the inter-relationship of the phenomena of the world around him is awakened at an early age will he be able to incorporate his own personal share in the creative work of his time.

As both the future craftsman and the future artist were subject to the same fundamental training at the Bauhaus, the latter had to be sufficiently broad to enable each talent to find its own way. The concentric structure of the whole training embodied all the essential components of design and technique right from the beginning, in order to give the pupil an immediate insight into the whole field of his future activities. The further training merely gave breadth and depth; it differed from the elementary "preliminary training" only in degree and thoroughness, but not in the essence. Simultaneously with the first exercises in materials and tools, the training in design commenced.

IN addition to technical and handicraft training, the designer must also learn a special language of shape in order to be able to give visible expression to his ideas. He has to absorb a scientific knowledge of objectively valid optical facts, a theory which guides the shaping hand and provides a general basis on which a multitude of individuals can work together harmoniously. This theory is naturally not a recipe for works of art, but it is the most important objective means for collective work in design. It can best be explained with an example out of the musical world: the theory of the counterpoint which, though in the course of the ages it may have undergone certain changes, is, nevertheless, still a superindividualistic system for regulating the world of tones. Its mastery is required lest the musical idea should remain lost in chaos; for creative freedom does not reside in the infinitude of the means of expression and formation, but in free movement within its strictly legal bounds. The Academy, whose task it should have been from the Middle Ages—when it was still a vital force—to tend and develop this theory for the optical arts, had failed because it lost touch with reality. Intensive studies were therefore made at the Bauhaus to rediscover this grammar of design in order to furnish the student with an objective knowledge of optical facts—such as proportion, optical illusions, and colors. Careful cultivation and further investigation of these natural laws would do more to further true tradition than any instruction in the imitation of old forms and styles.

In the course of his training, each student of the Bauhaus had to enter a workshop of his own choice, after having completed the preliminary course. There he studied simultaneously under two masters—one a handicraft master, and the other a master of design. This idea of starting with two different groups of teachers was a necessity, because neither artists possessing sufficient technical knowledge nor handworkers endowed with sufficient imagination for artistic problems, who could have been made the leaders of the working departments, were to be found. A new generation which would combine both these attributes had first to be trained. In later years, the Bauhaus succeeded in placing as masters in charge of the workshops former students who were then equipped with equal technical and artistic knowledge, so that the separation of the staff into masters of form and masters of technique was then found to be superfluous.

AFTER a three-year training in handwork and design, the student had to submit to an examination both by the masters of the Bauhaus and by the "Chamber of Handicrafts" in order to obtain the Journeyman's Certificate. The third stage for those who wanted to proceed was the Building training. Co-operation on practical building sites, practical experiments with new building materials, studies in draftsmanship and engineering led to the master certificate of the Bauhaus. The students then became either practical architects or collaborators in the industry, or teachers—according to their special gifts. The thorough manual training in the workshops served as a very valuable equipment for those students who found it impossible to penetrate into the more comprehensive and complex task of the architect's profession. The gradual and manifold instruction of the Bauhaus enabled him to concentrate on precisely that kind of work which best suited his capabilities.

The training in handwork given in the Bauhaus workshops must not be taken as an end in itself, but as an irreplaceable means of education. The aim of this training was to produce designers who were able, by their intimate knowledge of material and working processes, to influence the industrial production of our time. An attempt was made, therefore, to produce models for the industry which were not only designed but actually made in the workshops of the Bauhaus. The creation of standard types for the articles of daily use was their main concern. These workshops were essentially laboratories in which the models for such products were carefully evolved and constantly improved. Even though these models were made by hand, the model designers had to be fully acquainted with the methods of production on an industrial scale and so, during their training, the Bauhaus sent out its best students for a time, to do practical work in factories. Inversely, practical workers also came from the factories into the Bauhaus workshops, to discuss the needs of industry with masters and students. In this way a mutual influence arose which found its expression in valuable products, the technical and artistic quality of which were appreciated by manufacturer and customer.

THE creation of standard types for every-day goods is a social necessity. The standard is by no means an invention of our own era. It is only the methods of producing it which have changed. It still implies the highest level of civilization, the seeking out of the best, the separation of the essential and super-personal from the personal and accidental. It is today more necessary than ever to understand the underlying significance of the conception "standard"—that is to say, as a cultural title

of honour—and firmly to combat the shallow catchword propaganda which simply raises every industrial mass-product to that high rank "standard." The Bauhaus was primarily devoted to the task which today is becoming ever more urgent; that of saving the mass-product and the home from mechanical anarchy and of restoring them to purpose, sense and life.

In its collaboration with industry, the Bauhaus attached special importance also to bringing the students into closer touch with economic problems. I am opposed to the erroneous view that the artistic abilities of a student may suffer by sharpening the sense of economy, time, money and material consumption. Obviously it is essential clearly to differentiate between the unrestricted work in a laboratory on which strict time limits can hardly be imposed, and work which has been ordered for completion at a certain date; that is to say, between the creative process of inventing a model and the technical process involved in its mass-production. Creative ideas cannot be made to order, but the inventor of a model must nevertheless develop trained judgment of an economic method of subsequently manufacturing his model on mass-production lines, even though time and consumption of material play only a subordinate part in the design and execution of the model itself.

THE whole institution of the Bauhaus training shows the educational value which was attached to practical problems, which impel the students to overcome all internal and external friction. Collaboration in actual orders which the master had to execute was one of the outstanding advantages of handicrafts training in the Middle Ages. For that reason, I endeavoured to secure practical tasks for the Bauhaus, in which both masters and students could prove their work. In particular, the erection of our own institute buildings, in which the whole Bauhaus and its workshops co-operated, represented an ideal task. The demonstration of all kinds of new models made in our workshops, which we were able to show in practical use in the building, so thoroughly convinced manufacturers that they entered into royalty contracts with the Bauhaus which, as the turnover increased, proved a valuable source of revenue to the latter. The institution of obligatory practical work simultaneously afforded the possibility of paying students—even during their three years of training—for saleable articles and models which they had worked out. This provided many a capable student with some means of existence.

The most essential factor of the Bauhaus work was the fact that, with the passing of time, a certain homogeneity was evolved in all products: this came about as the result of the consciously-developed spirit of mutual work, and also in spite of the co-operation of the most divergent personalities and individualities. It was not based on external stylistic features, but rather on the effort to design things simply and truthfully in accordance with their intrinsic laws. The shapes which its products have assumed are therefore not a new fashion, but the result of clear reflection and innumerable processes of thought and work in a technical, economic and formal direction. The individual alone cannot attain this goal; only the collaboration of many can succeed in finding solutions which transcend the individual aspect—which will retain their validity for many years to come.

The success of any idea depends upon the personal attributes of those responsible for carrying it out. The selection of the right teacher is the decisive factor in the results obtained by a training institute. Their personal attributes as men play an even more decisive part than their technical knowledge and ability, for it is upon the personal characteristics of the master that the success of fruitful collaboration with youth primarily depends. If men of outstanding artistic ability are to be won for an institute, they must from the outset be afforded wide possibilities for their own further development; by giving them time and space for private work, also. The mere fact that such men continue to develop their own work in the institute produces that creative atmosphere which is so essential for a school of design and in which youthful talents can develop. This is the most important preliminary condition, to which all other questions affecting the organization must be subordinated. There is nothing more deadening to the vitality of a design school than when its teachers are compelled, year in and year out, to devote the whole of their time to classes. Even the best of them tire of this unending circle and must in time grow hardened. Art, in fact, is not a branch of science which can be learned step by step from a book. Innate artistic ability can only be intensified by influencing the whole being, by the example of the design-master and his work. Whereas the technical and scientific subjects can be learned by progressive courses of lectures, the training in design must, to be successful, be conducted as freely as possible, at the personal discretion of the artist. The lessons which are intended to give direction and artistic incentive to the work of the individuals and groups need by no means be very frequent, but they must provide essentials which stimulate the student. The ability to draw is all too frequently confused with the ability to produce creative artistic designs. Like dexterity in handicrafts, it is—however—no more than a skill, a valuable means of expressing spatial ideas. But virtuosity in drawing and handicrafts is not art. The artistic training must provide food for the imagination and the imaginative powers. An intensive "atmosphere" is the most valuable thing a student can receive. Such a "fluidum" can only grow when a number of personalities are working together to a common end; it cannot be created by organization, nor can it be defined in terms of time.

I HAVE tried to explain the example of the Bauhaus, as this has the advantage of my own practical experience through many years. On the basis of this experience, I should like to point out how the ground should be prepared in order to develop the arts and architecture by conscientious endeavour of the whole community. It is an urgent problem as to how the new generation should be taught and influenced for this common task from the beginning and how the State could intervene.

By its very nature, creative work also cannot be determined in advance, no one knows what direction its originator will take—often he himself does not know, because he creates out of the unconscious. Artistic questions can, by their very nature, be decided in each case by the individual alone and not by committees. Therefore, the very most that the State or public authorities can do is to concur intelligently in the initiative which comes from the artists themselves.

What can the State do, independent of private initiative, to bring the artist into closer contact with the life of the whole population—particularly with industry? The role which it has to play is, indeed, a difficult one. It must exercise the greatest circumspection if it is to prove of assistance in achieving the goal; in fact, the things which it must refrain from doing are often far more decisive than its active interest. Art needs no tutelage; it must be able to develop in complete freedom. The direction of art by public authorities, central supervisory organizations and laws are more likely to destroy creative impulses

than to assist them. The predominating question is: How can those gifted with talent be sifted out from the new generation as a whole, so as to enable them to receive effective training? This would mean, in the first place, a general basic training in art for all, starting with the smallest child, followed by *special* training as soon as necessary, but as late as possible. We need a new groundwork for all schools, a preliminary artistic training which—differing in degree according to the age of the pupils—would enable them to broaden their vision. The succeeding trade and professional training should as well undergo a certain reformation in its curriculum. It should not implicitly impart merely a knowledge of trades and specialized subjects, but also things which constitute the most essential condition of every kind of creative work, such as spatial perception, power of presentation, knowledge of materials and an understanding of business and industry and the proper handling of materials and ordinary machines. The "how" of the training is therefore primarily of greater importance than the "what." If manual skill, the understanding for materials and the power of observation and thought are first properly trained, any specialized training can be absorbed rapidly and without effort. As in the case of all attempts at a reformation, the State will be wise first to concentrate on *one* key-school, in order to determine what influence such a school for specially-talented students would be capable of exercising on architecture and handicrafts. For this experiment, it should get together the best teachers, give them far-reaching powers, and leave them at liberty to discover in actual practice an elastic form of organization; because only in this way can a high level be reached. To maintain this level, only a small number of schools of this kind for talented students will be necessary, even at a later stage, but the tendency of the training accomplished therein will be able to influence other kinds of schools for the artistic and technical professions and render them productive. In my opinion, less importance attaches to the nature of the organization which tradition and local requirements will evolve in these schools than to a homogeneous fundamental tendency of the training in all schools throughout the country. This, however, can only be achieved by the gradual recruiting of personalities that training in these schools for talented students will progressively produce.

WHEREAS the ideal is to concentrate these schools for talented students at a few centres only, the State should by extending all the existing instruction in manual skill and drawing, make the general artistic training obligatory in all schools. This would be in keeping with experience gained from Froebel to Montessori and would bring the whole problem a gigantic step nearer to solution.

I shall try now to suggest an outline for the general artistic instruction in all sorts of schools, starting from the conviction that *each individual is originally capable of producing spatial forms if the optical spatial sense is developed early.*

In the *first stage*—say in the crèches and kindergarten—all children should draw, paint and model in a very free form as in play, to attract the child and stimulate its interest and imagination.

In the *second stage*, in all public and private schools, the creative substance in the growing child must be awakened: that can be attained by giving simple handicraft instruction for all kinds of materials in conjunction with free training in design; by bipartite but simultaneous instruction in manual skill and form perception; by painting, modelling, building, assembling, free-hand and geometical drawing throughout the whole duration of the training. But this is important: No copying, no schemes, no specimens, no elimination of the urge to play: i.e., *no artistic tutelage.* The whole task of the teacher is to keep the child's imagination awake and constantly to stimulate its desire to build, model and draw. The children's drawings and paintings must not even be corrected for their power of imagination is so easily irritated by grown-ups. The skill develops by itself later on, if the teacher has succeeded at all in stimulating the child. So much for the ground work of art education in general schools.

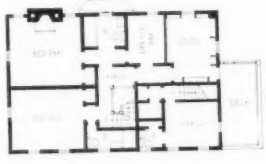
THE *third stage* has to deal with the training for more advanced pupils in all sorts of technical schools—as state and local art-and-handicraft schools, schools for apprentices in industry, trade and technical schools of low and high degree, including all kinds of architectural schools. When pupils coming from public and private schools start their professional studies in one of these technical schools, they should receive there first a kind of concentrated "preliminary training" in design and handicraft—duration about six months to a year. This training should be given with a view to sifting out, by means of a sort of qualification test, the artistically-talented students for further training in a special school of design. Thereupon, the succeeding last stage of the training should be split up into two different courses of professional training.

One course would continue the normal trade instruction in all the existing technical schools mentioned before. Their special training would be: manual skill for the profession selected, work on machines, construction, technical drawing, works technique and costing. This course would turn out: trade workers for industry and handicrafts, industrial and architectural draughtsmen, works technicians, works foremen and handworkers.

The other course—particularly for those pupils who, possessing artistic talent, have passed the qualification test within the first year of their "preliminary training"—should be offered in a special school of design of high degree and with extensive instructional powers. Subjects of training would be: instruction in independent design; comprehensive hand and brain training; extensive handwork and machine practice; i.e., a very active training which enables the students to discover results for themselves and opens the way for their creative powers. This special course would turn out independent architects, sculptors, painters; the men responsible for the experimental and designing work for industry; the art teachers, and the independent art handworkers.

THE most essential factor in artistic education is the *unity of its entire structure in all stages of development.* It can only grow concentrically, like the annular rings of a tree, embracing the whole from the beginning and, at the same time, gradually deepening and extending it. The dividing up of the training into individual sections, carried out separately as regards time and place instead of simultaneously, must destroy its unity. It is the sense of coherence in what he learns and not the accumulation of organically unconnected scraps of knowledge which makes the adolescent harmonious, far-sighted and productive. A creative art training such as I have here attempted to outline as an ideal aim would fuse art with technique and reintegrate the artist into the daily work of the nation.

This new teaching which will resemble the free handicraft training of the Middle Ages, except that it will be infinitely wider and profounder in its scope, will be able to adapt itself to the spirit of human progress and the changed productive machinery of the modern world.

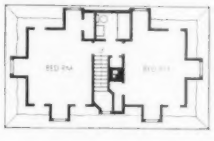


Built on a narrow lot, this house logically has its entry at the side. Both the treatment of the roof and the use of wood coin indicate that the design may have been inspired in part by the old Wentworth Gardner house in Portsmouth, New Hampshire. Walls are of cedar shingles weathered silver gray. In contrast the trim is white and doors and windows a bright green. Roofing shingles are dark gray asphalt

HOUSE OF JAMES MORGAN

LYNN, MASSACHUSETTS **HOWE, MANNING & ALMY, ARCHITECTS**

PHOTO: JOHN CASS



Cinder block was used for this small French provincial-type house. It is painted white with two coats of Portland cement paint. Trim, including the casement windows, is natural redwood. The roof of shingle on a wood frame is insulated with 2" of rock wool. Walls are insulated with metallation. Heating system is air conditioning

HOUSE OF EARL KATZENSTEIN

CHAPPAQUA, NEW YORK

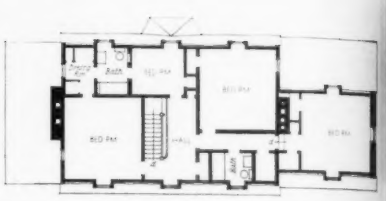
EMIL J. SZENDY, ARCHITECT

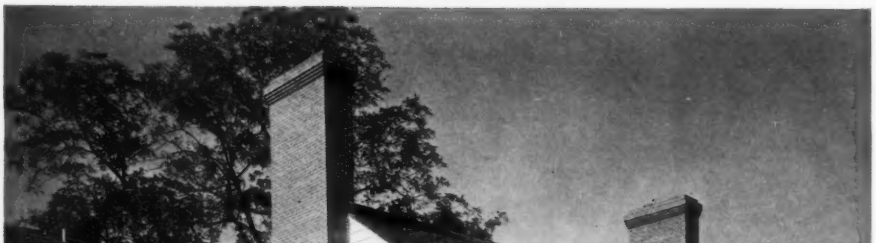
This house of Beaver County stone, pointed and parged with white cement, is inspired by old work in the western part of Pennsylvania. Foundation walls are 18" thick, junior beams and concrete are used for first floor construction, and the masonry bearing walls support second floor joists. From the second floor up, walls are frame veneered with 5" of stone or redwood siding. All trim is white except for blue-green shutters which harmonize with the slate roof

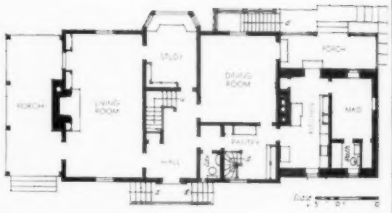
HOUSE OF THOMAS J. BRAY, JR.

SEWICKLEY HEIGHTS BORO, PENNSYLVANIA **JOHN M. FRANKLIN, ARCHITECT**

PHOTOS: LEOPOLD



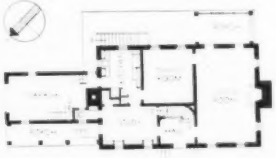




Designed in a characteristically colonial Maryland manner, this house which seems so small is actually 56,000 cubic feet in size. Built of stone and white clapboard, it has a gray slate roof. All trim is white except the dark green shutters. Insulation is 4" of balsam wool in roof and frame walls. Heating is done by a gas-fired air conditioning system

HOUSE OF DR. RICHARD W. TE LINDE

POPLAR HILL, BALTIMORE, MARYLAND **T. WORTH JAMISON, JR., ARCHITECT**



PHOTOS: FLEET

Old red brick is the obvious material for a house so definitely designed in the tradition of colonial Virginia. In handling the compact plan the garage was skilfully brought into the scheme so as not to mar the old spirit of the facade. Two bedrooms with connecting bath were desired for the occupants of the house so that the guest room and bath could be as isolated as possible. The closet arrangement is also very good. Roofing is of slate in shades of gray, green and brown. All outside trim is white

HOUSE OF MRS. W. E. MCCOY

MANASSAS, VIRGINIA

M. MADELEINE MCCOY, DESIGNER

Designed somewhat in the image of a ship, this house is ideal for its ocean front setting. A typical Palm Beach construction, consisting of stucco 8" interlocking tile, 1" air space, 15-lb. fel sheathing 2" x 4" studs, plaster on wood lath on the walls and metal lath on ceilings, is use

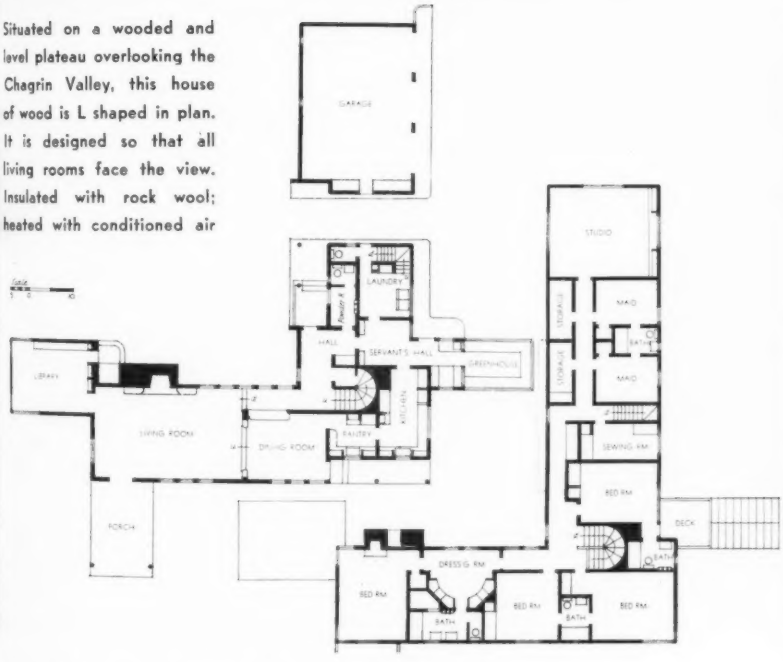
PHOTOS: SAMUEL H. GOTTSCHO

HOUSE OF MRS. JOSEPH F. MORAN

PALM BEACH, FLORIDA

JOHN L. VOLK, ARCHITECT

Situated on a wooded and level plateau overlooking the Chagrin Valley, this house of wood is L shaped in plan. It is designed so that all living rooms face the view. Insulated with rock wool; heated with conditioned air



PHOTOS: CARL WAITE

HOUSE OF VINCENT K. SMITH

GATES MILLS, OHIO

HAYS & SIMPSON, ARCHITECTS

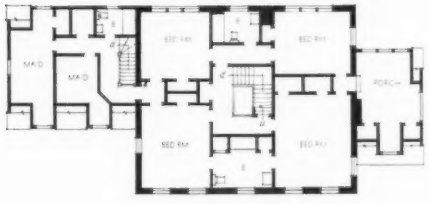
Located on the shore of Lake Michigan, all principal rooms are placed at the rear to take advantage of the view. Construction is brick veneer with slate roof. All windows are double glazed wood casements, and the entire house winter air conditioned

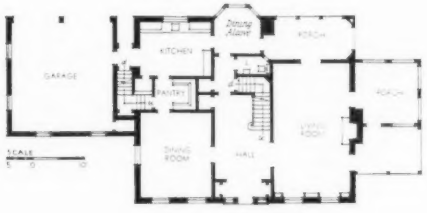
PHOTOS: HEDRICH-BLESSING

HOUSE OF ROBERT ZIMMERMAN

GLENCOE, ILLINOIS

E. M. TOURTELOT, ARCHITECT





Of typical Colonial design in both plan and elevation, construction is of common brick painted white. The roof is of slate in variegated colors, and insulated with balsam wool. Heating is by a gas burner — air conditioned throughout

PHOTOS: PIAGET

HOUSE OF JOHN E. STEPHENS

ST. LOUIS, MISSOURI

PRESTON J. BRADSHAW, ARCHITECT

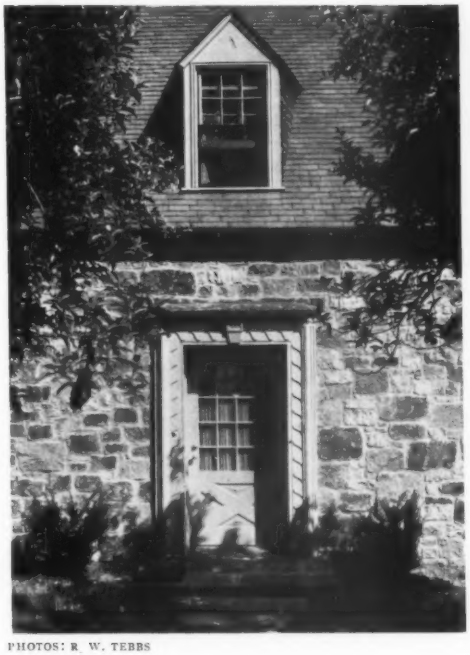
PHOTOS: GEORGE SMITH

Advantage was taken of the sharply sloping site to place all main rooms on one level. The few necessary services were located in a full story basement at the rear. Construction is of brick veneer painted white. Roof is of asphalt shingle

HOUSE OF W. C. O'FERRALL

BIRMINGHAM, ALABAMA

MILLER AND MARTIN, ARCHITECTS



PHOTOS: R. W. TEBBS

Owing to its situation, the porch, living rooms and all bedrooms, except the maid's, are at the rear of this house, overlooking a magnificent scene. Veneered with local weathered stone on wood frame, this house is thoroughly insulated. Roofing is Vermont slate

HOUSE OF MARTIN BAKER

KNOXVILLE, TENNESSEE

BARBER & MCMURRY, ARCHITECTS

XUM

PHOTOS: ROBERT YARNALL RICHIE

Freely adapted from Greek revival and ranch house precedent, this house has an identity of its own entirely in harmony with the Texas climate and landscape. Of frame construction, it is finished externally with painted horizontal and vertical boarding. Although compactly designed, the use of porch gives it an out-of-door quality. Walls are insulated with double faced metallation. Air conditioned throughout

HOUSE OF BENJAMIN CLAYTON

RIVER OAKS, HOUSTON, TEXAS

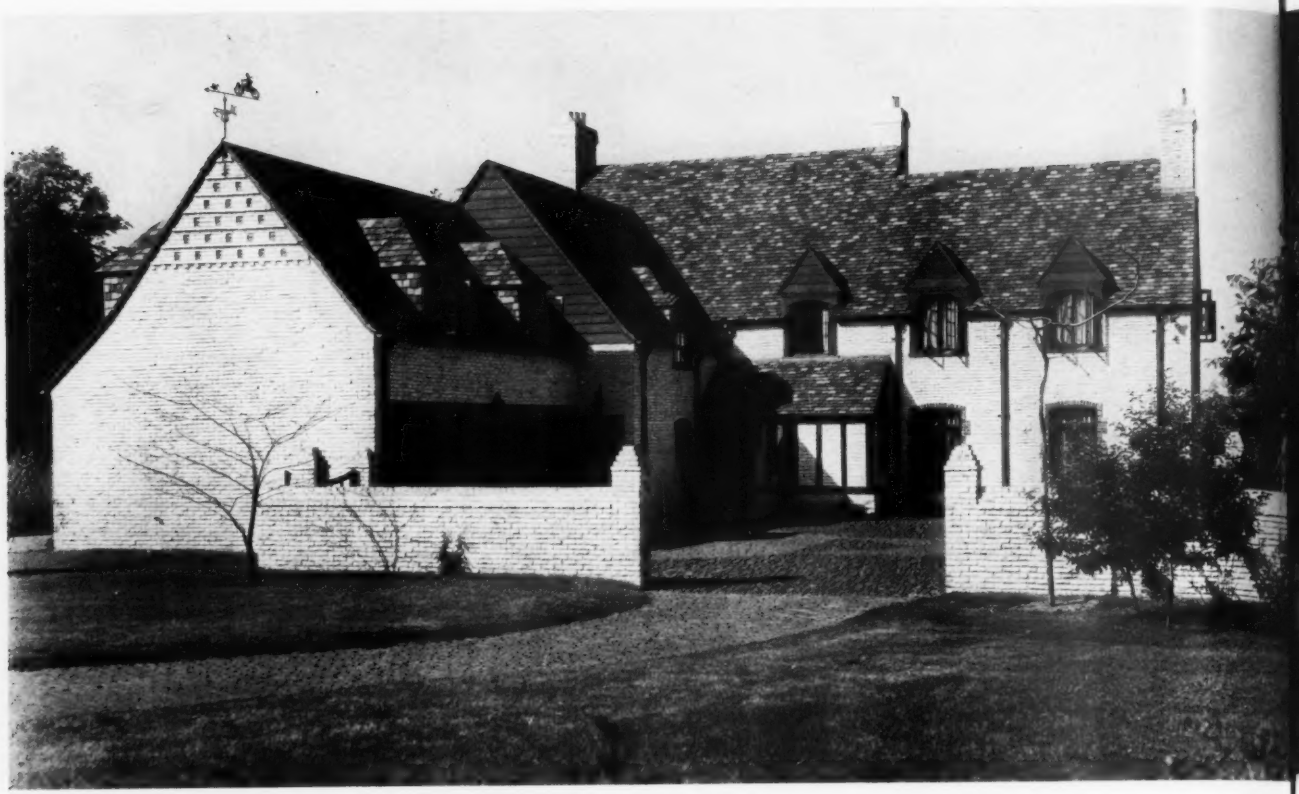
ROLAND E. COATE, ARCHITECT

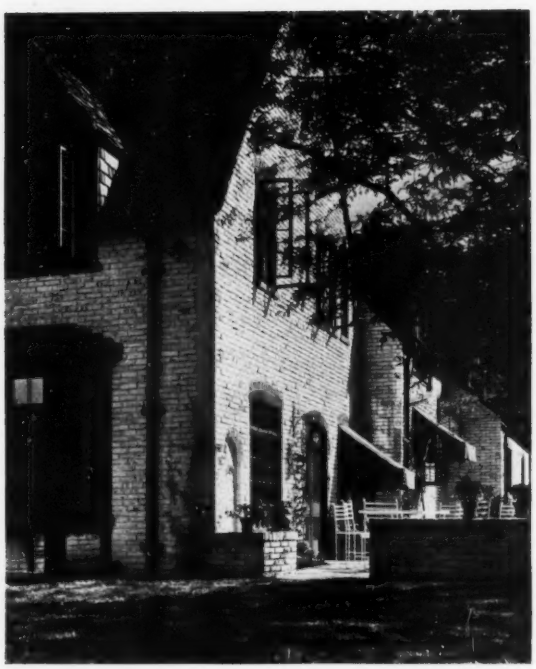
Long horizontal lines keep this house in harmony with its prairie state setting. Brick veneer in shades of rust to red, pre-stained dark brown roofing and dark brown exterior trim give it a rich quality in color. Windows are of the casement type. Insulation over ceilings consists of 4" of mineral wool. Heating is warm air conditioning which provides for a later cooling system

HOUSE IN EASTBOROUGH

WICHITA, KANSAS

BUTLER & ROCHESTER, ARCHITECTS





Separation of the service wing from the rest of the house and the fine view overlooking a lake determined, to some extent, the plan layout. Construction is of brick veneer painted white, with all exterior woodwork stained brown. Roof is of Ludowici tile. The dining room and study are walnut plank paneled. Heating is warm air, gas heat, air conditioned

HOUSE OF DAVID S. KRUIDENIER

DES MOINES, IOWA

JOHN NORMILE, ARCHITEC

PHOTOS: ERVEN JOURDAN

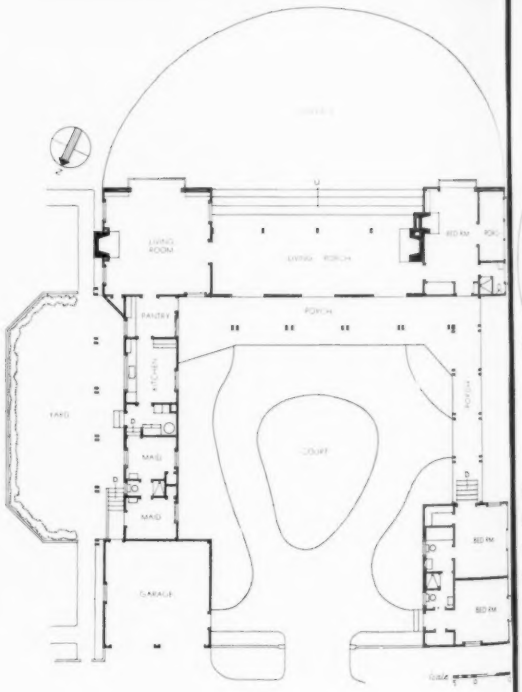
Both the irregular terrain falling away sharply from the street and the main view to the north influence the irregular plan of this house. Of wood frame construction on concrete foundation, the exterior finish of stucco and siding is painted white. Heated with oil fire-induced warm air

HOUSE OF FREDERICK M. DE NEFFE

PORTLAND HEIGHTS, PORTLAND, OREGON

ROI L. MORIN, ARCHITECT

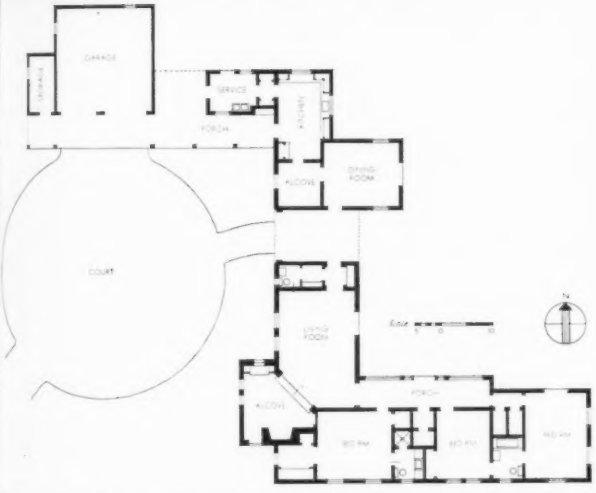
California ranch house has come to be a generic term for a remarkably diverse kind of domestic architecture based on rambling plans, suitability for out-of-door living and a low-slung character that fits into the landscape. In plan this house is really four small houses tied together by porches around a courtyard. It is entirely wood construction with corner studs only and exterior bevelled redwood siding painted white. Roofing is of untreated cedar shakes and certain doors and shutters are of natural redwood



HOUSE OF MRS. VINCENT K. BUTLER, JR.

PASATIEMPO COUNTRY CLUB, SANTA CRUZ, CALIFORNIA

WILLIAM WILSON WURSTER, ARCHITECT



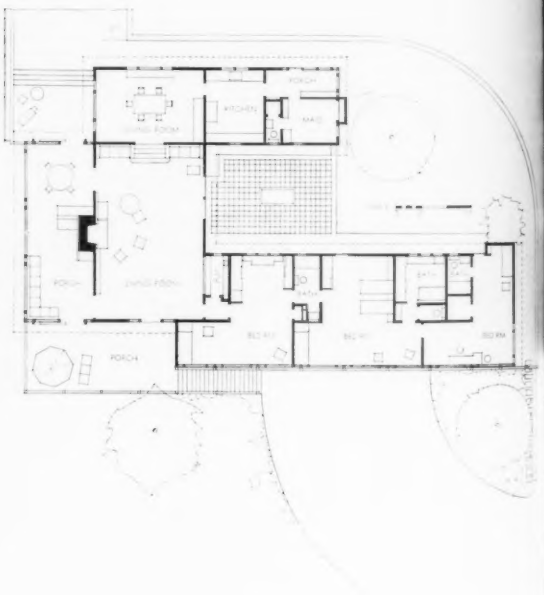
Built in the characteristic rambling fashion of many one-story California houses, the novel use of a sort of dog-trot between the service and the living units makes this plan unusual. Outside walls are cement plaster, vertical redwood boarding and brick. All walls, trim, sash and doors are oyster white. Weathered cedar shingles and green shutters offer a pleasant contrast to the white. Insulated with rock wool, this house has a semi-air conditioning heating system

PHOTOS: GEORGE D. HAIGHT

HOUSE OF DAVID S. WALTER

SANTA ANITA OAKS, ARCADIA, CALIFORNIA — MARSTON & MAYBURY, ARCHITECTS

Unit type timber chassis house with a plaster exterior. It has a smooth putty-finished exterior painted oyster white accented by aluminum-painted exterior woodwork. The battery of windows and other horizontal elements tie the house into its charming setting. Services are skillfully separated from living quarters by an inevitable California patio. The glass-enclosed porch separated by the fireplace wall from the living room seems at the same time to be definitely a part of the living room



PHOTOS: LUCKHAUS

HOUSE OF ALBERT RUBEN

UPLIFTERS CANYON, SANTA MONICA, CALIFORNIA RICHARD J. NEUTRA, ARCHITECT

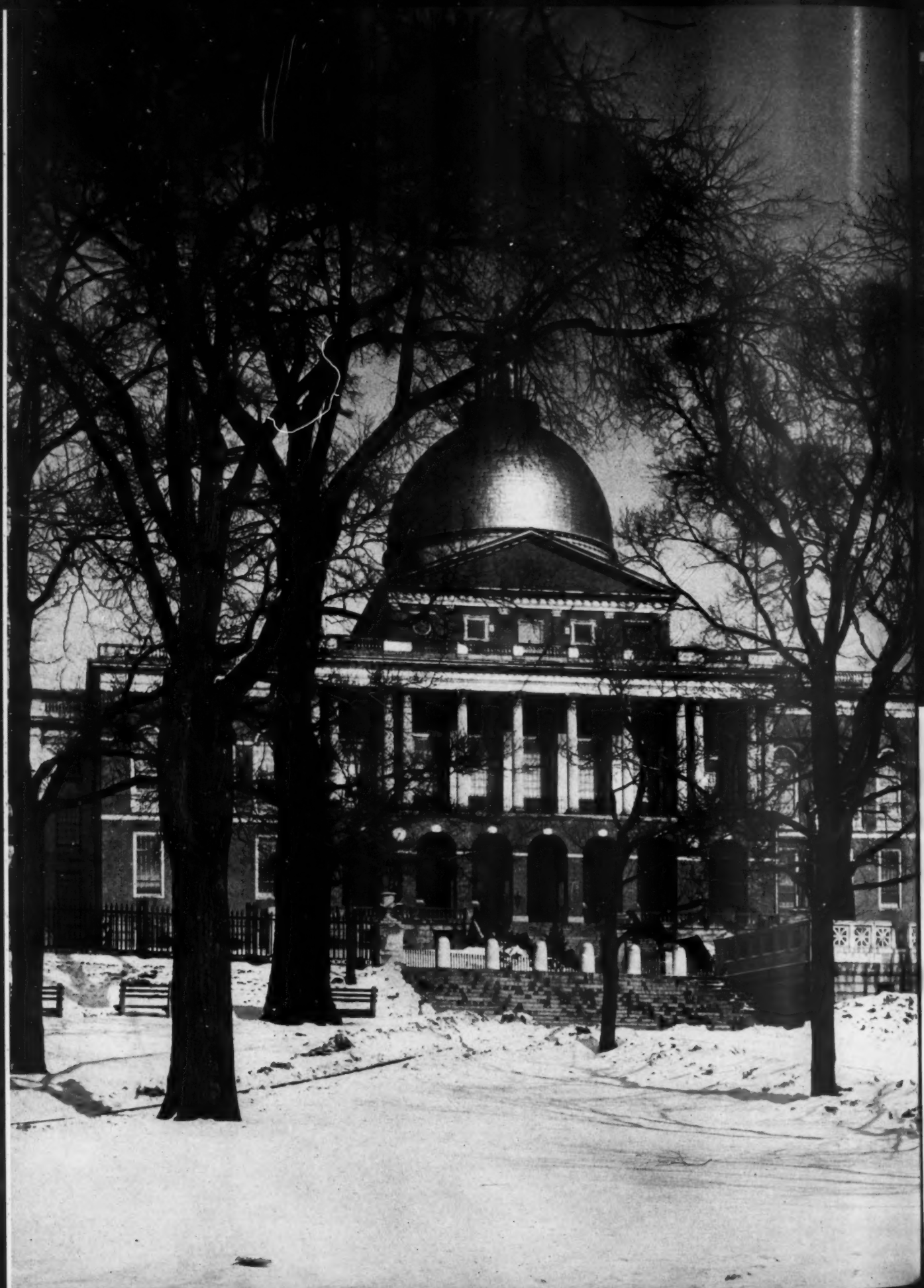
XUM

PHOTOS: © SAMUEL CHAMBERLAIN

ARCHITECTURAL OVERTONES

BOSTON

Faneuil Hall, built and given to the city by Peter Faneuil in 1742, sets the leit-motif for the paradox that: is Boston. Inseparably associated with ringing oratory for the sacred cause of liberty, its rooms have echoed to speeches by early patriots, abolitionists and distinguished visitors. Today it houses the armory of the Ancient and Honorable Artillery, founded in 1637, and in its lower floor, a public market. The building in the foreground is Quincy Market, built in 1826.



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The golden dome of Charles Bullfinch's State House (opposite page), built in 1795, is as definitely a symbol of Boston as the Common which it faces. This building is on the site of a former pasture of the vast Beacon Hill estate of Thomas Hancock. (Above) The sun streams down on King's Chapel and the worn slate tombstones of its green graveyard lying in a Grand Canyon setting of high business buildings.

XUM

According to legend, Ralph Adams Cram revived the pleasant English custom of singing Christmas carols in the streets of Beacon Hill. Today there is no other place in America where this quaint observance is carried on with the same earnest regard for tradition. All traffic is stopped, lighted candles illuminate windows and a gay crowd fills fashionable Louisburg Square (above). Acorn Street, on Beacon Hill, is characteristic of that section of Boston

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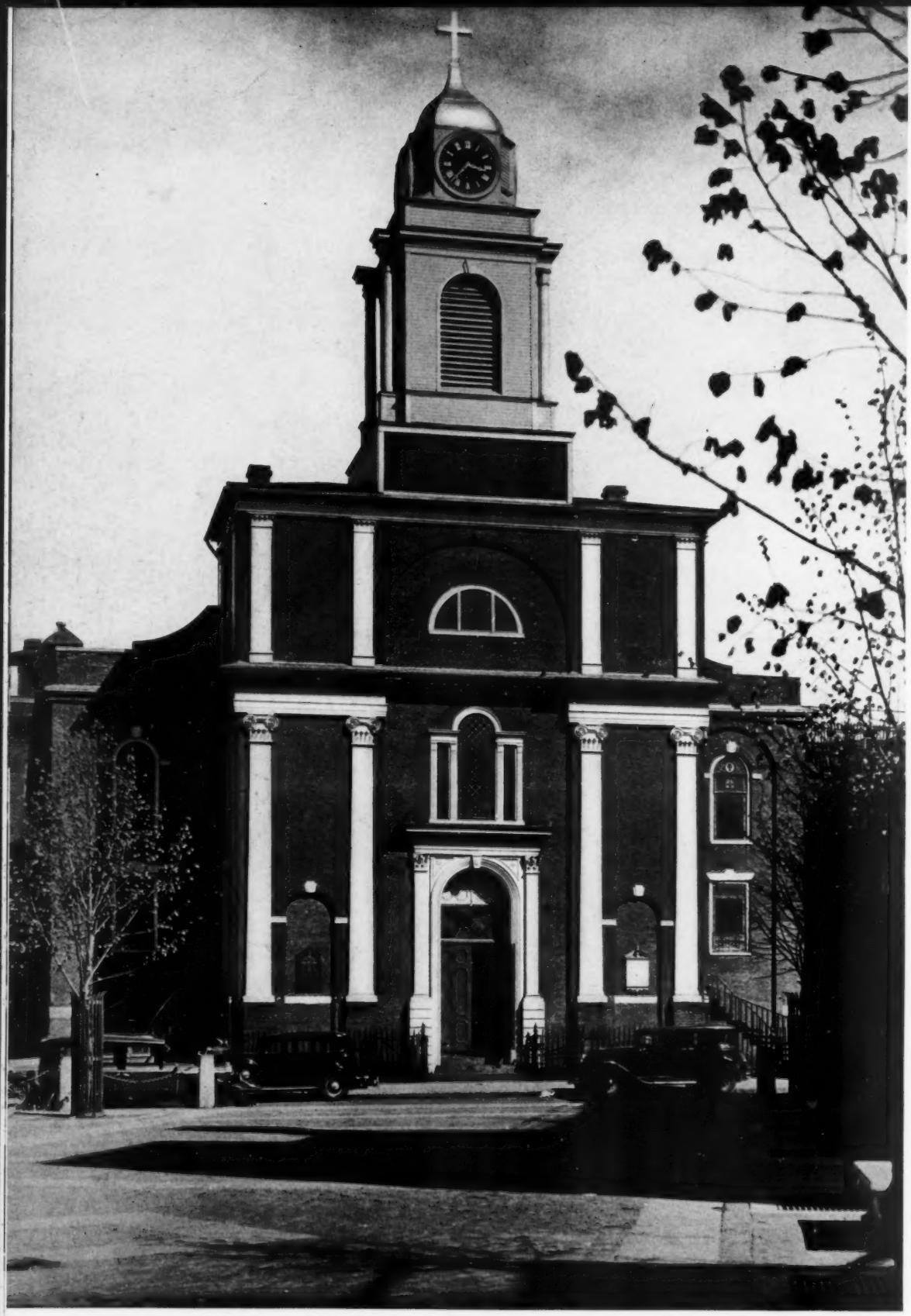

St. Stephen's Church (above), built in 1804, is another example of the work of Charles Bullfinch. (Opposite) The Old North Church, built in 1723, is undoubtedly the most famous church in America, for from its tower appeared the two lights that sent Paul Revere riding through the night to Lexington to make history and a new nation

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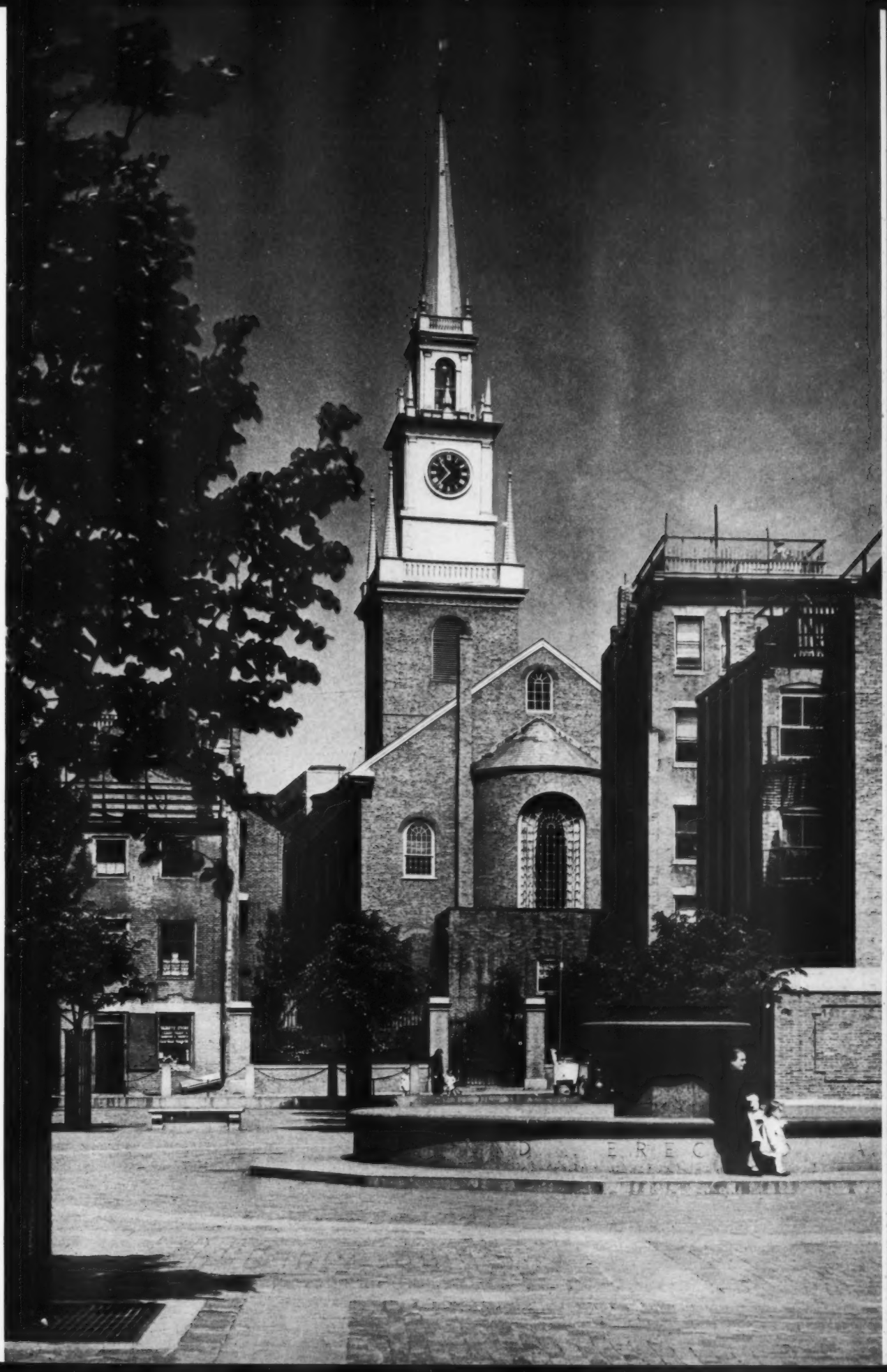

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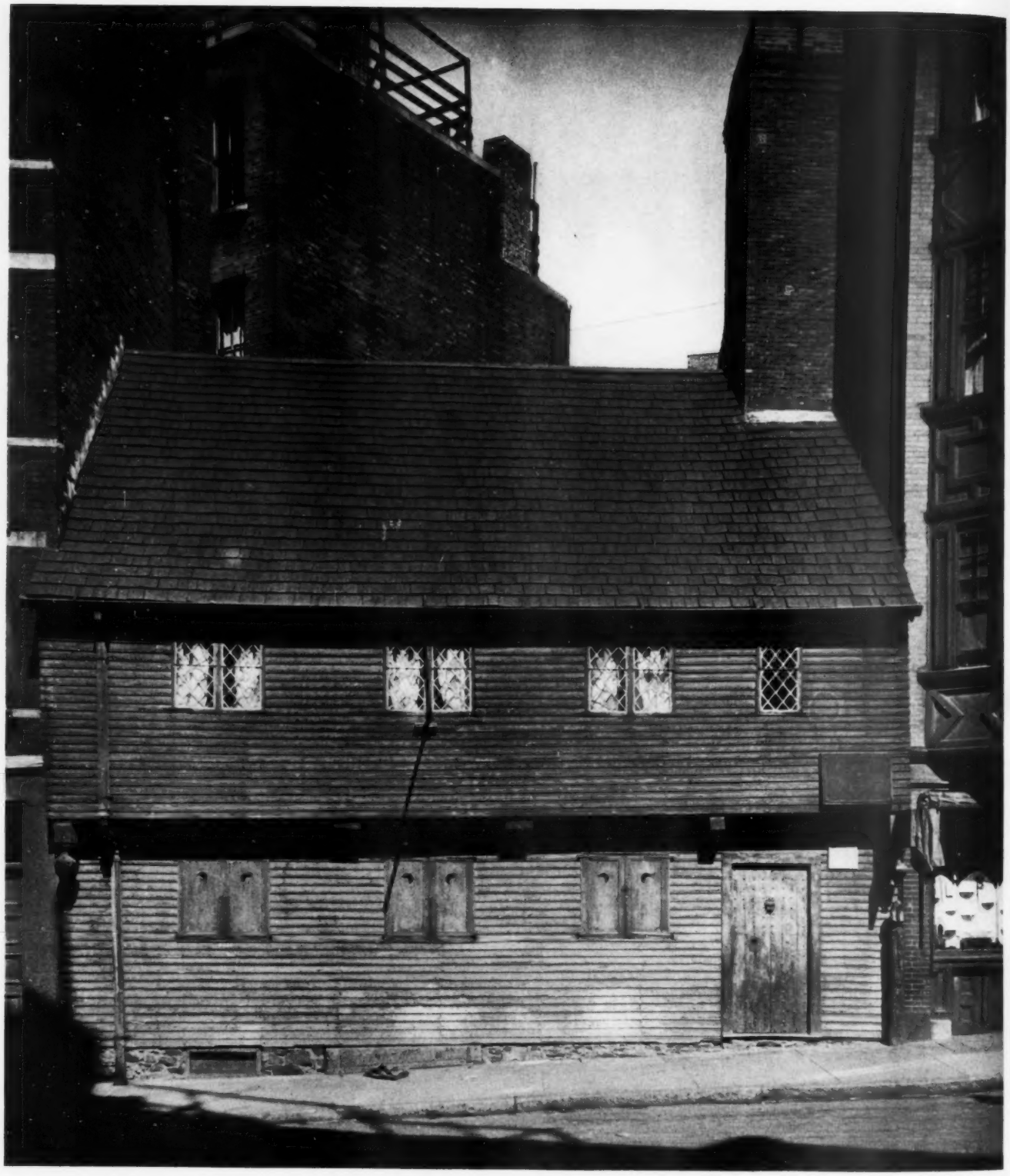


Paul Revere, besides being a patriot, was a man of extraordinary accomplishments—engraver, coppersmith, silversmith, designer, builder of a field gun carriage and workable false teeth. His home, built in 1660 and restored in 1908, remains a shrine to a remarkable American.

FUTURES

IN THIS PERIOD of rapid change in the social, economic and political structure, groups engaged in particular work must readjust their thinking and activities to meet these changes. Merely hoping that the status quo may be maintained is futile. The profession of architecture has gained enviable recognition in the past fifty years. However, during the last few years the problem of survival in the private practice of architecture has become increasingly acute as competition in the field of building design has sprung up from all sides. How to meet this competition should occupy much of the time of the architects assembled at the A. I. A. convention.

The depression has made it necessary for many younger men to devote their services to building design organizations outside of the so-called "profession." Engineers and builders, industrial designers, real estate developers and manufacturers have absorbed men who might be practicing as professional architects, in their own names. Governmental departments —national, state and local—have also absorbed these anonymous architects. Well-trained and able designers are thus adding to the prestige of groups other than the "professional architect," and this necessarily to the detriment of the profession. This process may continue if the public feels that these other organizations are more competently organized to fill its demands. We believe that the only advantage these organizations have is that of better merchandising, better advertising and better publicity methods. Professional ethical standards have frowned upon the commercial aspects of architecture, and have thus paved the way for others to take the play away from the profession in the public mind.

The problem is not alone one of merchandising and publicity: it is a problem of orienting the profession, of more accurately defining its functions, of unifying its efforts and, above all, of increasing its competence in the fulfillment of those functions to which it addresses itself.

The profession cannot accuse others of usurping their prerogatives, if it does not define them, is not organized to defend them, or is not competent to exercise them.

It is thus a three-part problem of direction, organization and education.

WHO DESIGNS HOUSES?

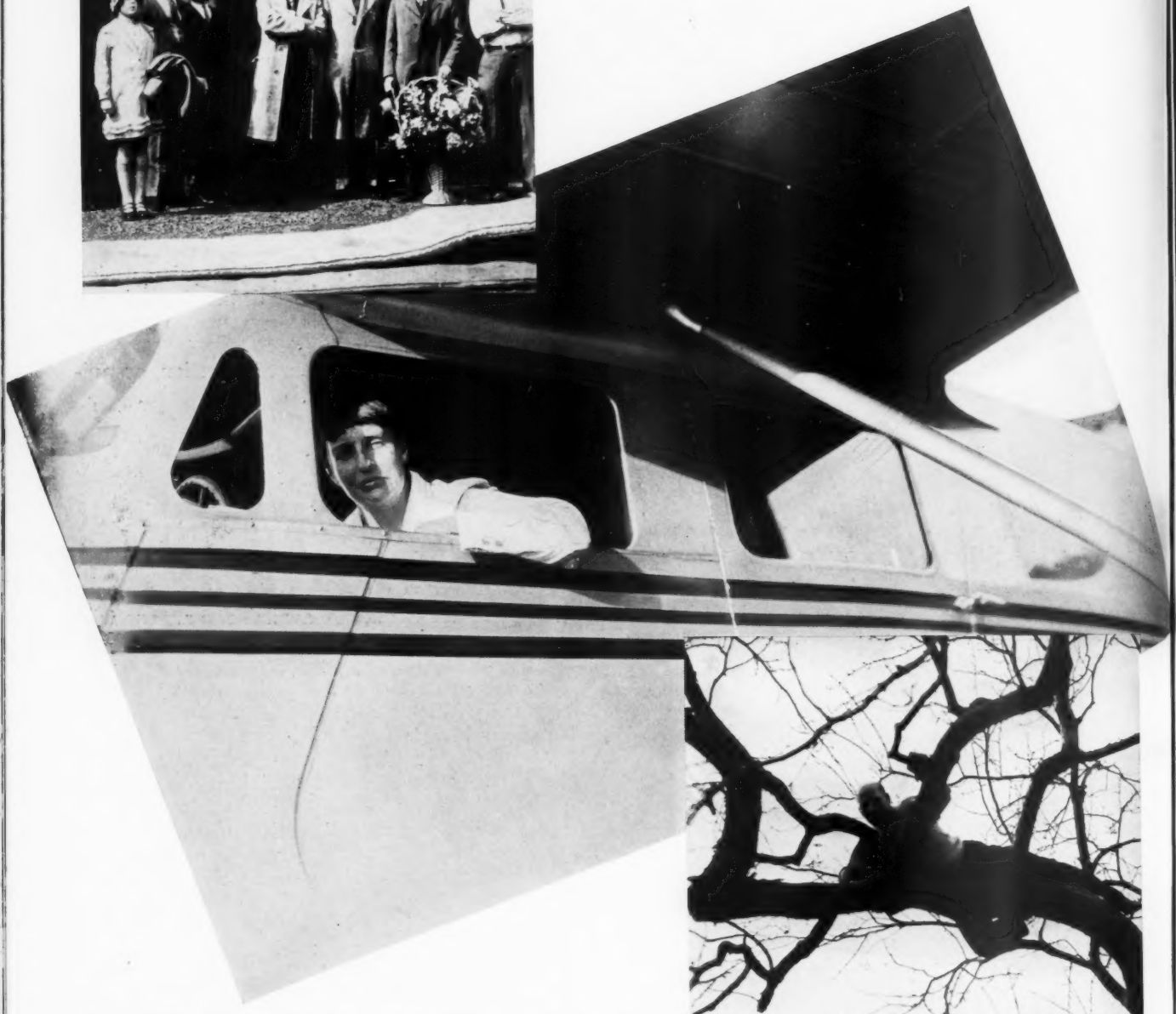
THE ARCHITECTS of America design probably 90% of the houses in America, statistics of contracts to the contrary notwithstanding. But the architects do not design these houses individually; they design them unwillingly through unauthorized agencies. These self-appointed proxies are contractors, carpenters, speculative builders, young draftsmen, plan publishers—in fact, anyone with a camera and a more or less facile pencil. These copyists sometimes have a surprising lack of taste, sense of proportion or appreciation of either function or beauty. However, the architects themselves do set the pace—the others copy. Plan book publishers have been known to photograph existing buildings designed by architects, and to devise a plan which might fit, to put in their catalogs from which to sell plans. Architects' designs appear in innumerable magazines and are available to anyone who can use them, either intelligently or unintelligently. While it is unfortunate that this publicity given to architectural work has meant that many have profited other than the creators, the effect, on the whole, has been to raise the standards of design of small houses in this country. In view of these realities, the only solution to the small house architects' problem seems to be that of proving to the public that the architect can design a house which will cost no more, but which will perform its functions better, give more lasting satisfaction to the owner than the imitative, jerry-built house. The architect might be able to do this by more closely integrating his work with the actual construction by letting the subcontracts himself and giving real supervision.

Kenneth K. Stowell

EDITOR

XUM

. . . architects and avocations



Everyone in the profession is familiar with the perennial youth of IRVING K. POND (top). He demonstrated it thus on his 79th birthday and expects to repeat it on his 80th, which is approaching . . . MISS GEORGINA P. YEATMAN (center), Philadelphia's City Architect, when tired of her ground work, takes to the air and looks at the city as through a reducing glass . . . ROSWELL F. BARRATT (upper right), New York, spends some of his very limited play time pruning the trees on his place, Applehatch, in Ossining, N. Y. . . . JOHN WELLBORN ROOT apparently finds comfort in abandoning the Chicago skyline for hills and dales where the builder's hand has never set foot.

PHOTOS: ROBERT M. DAMORA

REINHARD & HOFMEISTER, ARCHITECTS

Until recently most bank directors evidently believed that public confidence in their institutions was aroused by buildings designed in the image of Roman baths. This is no longer the rule. As modern architecture emerged from the shell of meaningless zig-zag ornamentation the logic of its direct forms appealed to precise banker minds. In the design of the new branch offices for the East River Savings Bank in New York, the solution of a difficult plan problem (see page 61) served as the basis for a recurrent decorative theme. A supplementary work space above the main work space is an economical handling which does not interfere with the openness of the main public space. Since fire laws required that in certain places, such as housing for the columns and simple cornice, wood must be fireproof, the resultant darkening due to this was used as part of the decorative scheme.

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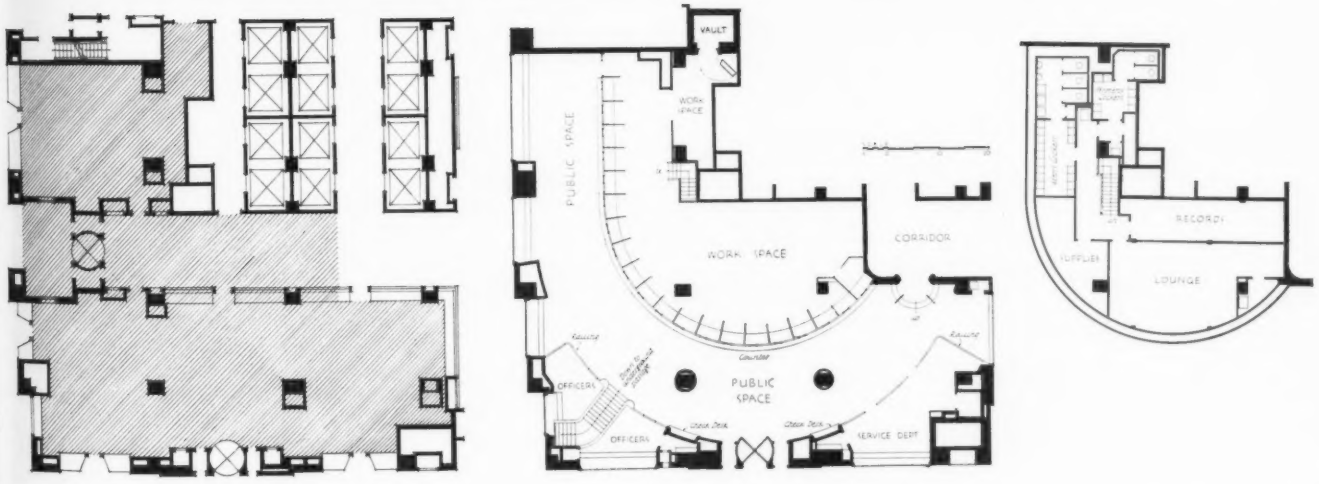

EAST RIVER SAVINGS BANK, NEW YORK. REINHARD & HOFMEISTER, ARCHITECTS

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Wood-paneled wails are of light teak accented by darker fireproofed and ebonized teak. Terrazzo floors are black with white metal strips. The ceiling in the main public space is of plaster painted powder blue, while the ceiling in the work space is a ventilating, acoustical tile. All metal work is stainless steel except for baked enamel steel equipment in the work space.

EAST RIVER SAVINGS BANK, NEW YORK

REINHARD & HOFMEISTER, ARCHITECTS

XUM

Standards of RESIDENTIAL LIGHTING

BY EUGENE W. COMMERY

THE newest concept of good residential lighting has sprung recently from a background of scientific activity. Research has established beyond all question that light and the associated effort of seeing has a profound effect on the human being. It has also established the fact that this effect is mild or severe in relation to the quantity and quality of the light itself. The perfection of delicate photometric instruments has given a means of measuring light scientifically in terms of quantity. But the newest concept of good lighting extends this measuring technique in terms of lighting quality which involve elements of contrast, diffusion, location and balance. Quantity can be determined precisely. But measurement of these quality characteristics necessitates an evaluation of their individual contribution to a generally-effective lighting result. And it is only from a knowledge of how these individual elements can be provided that standards of good residential lighting can be developed.

Fortunately, it is no longer necessary to guess how these required standards can be met. Science has demonstrated laws for measuring good seeing and experience has adapted the principle to include good feeling as well. Quality and quantity of light can be made sufficient to serve our eyes comfortably and adequately for any given visual task. It remains only to produce lighting arrangements of such character that this service can be made a pleasant and appropriate one.

Research tests have established the fact that seeing involves much more than light and the eyes. Nerves, muscles, the brain and the heart all play a part and react according to the lighting conditions at hand. When lighting is inadequate the entire body strains unconsciously to see. The Seeing Standards set forth in Table I should be regarded by the architect as minimum requirements for the lighting of any house, for they are today just as necessary a part of a modern residence as sanitary plumbing or adequate ventilation.

These quantitative seeing standards will vary over a wide range, depending on the visual task at hand. It will be noted in all instances that the upper figures in the table are essentially twice the lower figures. Each range of values represents a single step in the scale of seeing effectiveness. This is because a given quantity of light must be doubled before a demonstrable change in the ability to see will be produced. If, for example, there are 10 footcandles of light on a certain plane, value must be increased to 20 footcandles before the next step in seeing effectiveness is reached. This, in turn, must be increased to 40 and the 40 to 80 for each successive step of improvement. The explanation of these facts is highly technical and involved with innumerable tests related to the physiological mechanics of seeing. The principle is well-established, however, as a practical guide in the development of good residential lighting.

Quantity alone is not sufficient for comfortable seeing, however. The factor of comfort is in turn developed from lighting contrasts, from diffusion of light to eliminate unpleasant shadows, from the location of the light source itselt and from a balance

STANDARDS FOR GOOD RESIDENTIAL LIGHTING INCLUDE THESE FOUR IMPORTANT PARTS

1. QUANTITY — The level of illumination should never be less than that scientifically established as a minimum for comfortable seeing in relation to the visual task.

2. QUALITY — Lighting should be entirely without glare and should be distributed so that dark shadows and sharp contrasts are eliminated. The ratio between local and general illumination should be no greater than ten to one.

3. CONTROL — Light sources should be varied in type, located to assure adequately balanced levels of both general and local illumination and completely adapted to variation in lighting conditions when desired.

4. USE — The light source itself should be always secondary to the lighting effect produced. The primary purpose of any fixture, except those which are purely light sources in themselves, is to illuminate the objects to be seen according to the practical and esthetic results desired.

between quantity and quality of light sources which eliminates disturbing glare and places each light source in a pleasant relation to the entire lighting scheme. Thus, comfort as well as utility has an important bearing on good residential lighting.

In addition, the adaptability of the lighting arrangements to the various uses of a room is almost as important as the factors of utility and comfort. Without doubt, good lighting in the home could be achieved with no difficulty whatever in the same way that it is developed in stores or offices, in theatre lobbies or in restaurants. But the quality of appropriate design would be lacking and there would be no way to adapt the character of lighting to the varying uses of the interior. We need comfort and utility in residential lighting. But we also need that peculiar attribute called "charm" which can only be achieved by providing the mechanics of good lighting which will make available a variable effect proportionate to the type and use of the interior.

Long association with flames and other feeble light sources and familiarity with the more or less historic forms of domestic architecture combine to suggest non-uniform lighting as a means of creating a "home-like atmosphere." Such influences may not be lightly disregarded. A newer concept does not disregard them; but it does, or should, permit improvement. This improvement is mainly effected in two ways:

(a) Levels of illumination may be markedly increased for the cost of light has been repeatedly reduced since the days of candles and kerosene;

(b) Contrasts may be materially decreased. Dark, obscure corners may be eliminated and the whole brought into a harmonious combination of light and shade, high-light and shadow.

CHARACTER OF GOOD LIGHTING

Residential lighting differs from lighting used in many other types of interiors for two main reasons. One is that most lighting is installed to facilitate certain specific activities of work or display within a given space. Every square foot of an industrial or commercial interior must be ready to serve any arrangement of objects, machines or furniture; and to serve all occupants and areas equally well, high uniformity of light is desirable. In the home, the situation is reversed. No such occupancy or space factor need to be considered. And from the psychological standpoint, uniformly distributed light of high level is associated with work-spaces. Accordingly, it tends to destroy the restful domestic character so desirable in any residential interior.

The other reason refers to the importance of varying degrees of light and shade which have such a profound effect upon architectural and decorative design and contribute much to the charm and restfulness of home environment.

Adaptability and Control. The design of an interior is fixed by its architectural or decorative treatment. But the personal impression of that design can readily be changed—as the effect of a sunlit room is changed by the passing of a cloud. Such a change is obviously not subject to control. But through control of artificial lighting, the aspect of a room can be altered through wide ranges. Indeed, the number and degree of changes is limited only by the expense of obtaining the desired results.

So extensive are these possibilities, that light can be considered as a major instrument which can enhance or detract from the best considered work of architect or decorator. In other words, lighting can easily be adapted not only to suit the mood of an individual but can be controlled to provide a suitable background for any use to which a room may be put. And this can and should be accomplished within the limits set by the standards of good seeing already discussed.

Any impression that artificial light in residences is inherently faulty cannot be substantiated. It has developed because use of light has been misunderstood and because available light sources have been improperly chosen to supply lighting of proper quality in adequate amounts.

Design. The problem of good residential lighting as contrasted with work or display lighting is further complicated by the current importance of period, or stylistic, design in residential interiors. When characteristics of such designs are conscientiously reproduced throughout the house, some compromise is necessary to achieve proper lighting according to modern standards.

It is impractical today to reproduce every detail of the particular period to which the design of the house is keyed. Present light

TABLE 1 — MINIMUM RECOMMENDED ILLUMINATION FOR HOUSEHOLD ACTIVITIES

Visual Tasks	Footcandles
Reading	
Ordinary reading, books, magazines	10 – 20
Prolonged reading, fine type	20 – 50
Studying	20 – 50
Writing or typewriting	10 – 20
Card playing or games	5 – 10
Drafting or other detail work	50 – 100
Bench work	10 – 30
Handicrafts	
Weaving, knitting, etc.	10 – 30
Sewing	
Ordinary, on light goods	10 – 20
Prolonged, on light goods	20 – 50
Prolonged, average sewing	50 – 100
Fine needlework on dark goods	100 or more
Playing	
Children's games, etc.	10 – 20
Kitchen work	10 – 20
Washing and ironing clothes	10 – 20
Shaving, make-up, etc.	10 – 30
Walking up and down stairs	2 – 5
General circulation in rooms	2 – 5

sources are obviously at variance with those of yesterday; and consequently modern lighting arrangements cannot exactly reproduce design conditions of the past. But *relative* design values can be gained through judicious use of proper lighting equipment, styled to catch the spirit, if not the exact substance of both grand or intimate styles. Thus, within a frame of technical compromise, it is not necessary to sacrifice design to supply standards of good lighting.

Light in itself is an element of design. It can be brash, obvious and distracting. Or it can be unobtrusive, balanced in effect and wholly satisfying as a useful thing contributing an important factor of brilliance or restfulness to the finished work. For example, built-in lighting is youthful and modern in quality and application. In a room of great simplicity it creates a fresh, stimulating and informal effect which is usually out of key with the studied dignity of early period design.

Again, lighting arrangements should ideally be keyed both in design and mechanics not only to architectural style of interiors but also to the characteristics of the individuals who occupy them. Lighting design is both an objective and subjective art. It must produce a physical harmony of design effect and at the same time a psychological satisfaction resulting from proper adherence to technical standards.

METHODS OF LIGHTING

Accomplishment of these things is possible by proper choice of a wide variety of equipment which, categorically, includes portable lamps, wall and ceiling fixtures, and built-in light sources. In all three classifications are light sources which may be direct, semi-indirect, indirect or any combinations of these. A specific choice depends upon the physical environment at hand; upon the interest, problems and personalities of people with whom an architect has to deal; and upon the financial means placed at his disposal.

Indirect lighting provides a large and effective light source thereby creating maximum softness of shadows, low brightnesses and spread of lighting effect. All light from the source is directed to the ceiling or ceiling and upper wall areas. Maximum benefits are achieved when light is spread over the ceiling in the most uniform manner instead of being high immediately above the fixture and dim on the remainder of the ceiling.

Semi-indirect lighting may provide many advantages of indirect lighting in varying degrees. Its additional value depends upon the proportion of light transmitted directly to the side walls and floor. Where the best grades of softness and high diffusion are not needed, semi-indirect lighting may be utilized to increase illumination levels from a given wattage. As the amount of light primarily

Good residential lighting is dependent, not upon period styling, but upon type of fixture, wattage, and proper balance between general illumination and localized illumination of specific areas. General illumination in both illustrations above is adequate and uniform, local illumination adequate, without glare. Fixtures are well chosen, light sources being concealed and sufficiently far from shades to prevent concentrated spots of light.

Dining rooms require even general illumination with a special emphasis of local light upon the table. Above, one ceiling fixture supplies both. Opposite page: upper left, general illumination from indirect torcheres; upper right, general illumination from well shaded ceiling candelabra and wall fixtures.

directed to the walls and floor is increased, semi-indirect lighting approaches the effects produced by direct lighting.

Direct lighting may provide the greatest level of illumination for a given wattage. But in so doing, higher light-source brightness is introduced, hardness of shadow increases and a garish effect may be produced. In the most severe form, all light from the source is directed downward. Little or none strikes the ceiling or walls. While this creates a theatrical effect, expert handling is required for satisfactory results. Glare is always lurking to defeat the design.

General Lighting. An indirect lighting and semi-indirect lighting fixture may supply a greater uniformity of lighting throughout a room than a direct lighting fixture. Uniformity may be achieved, however, in any room without regard to the type of lighting fixtures utilized, for it largely depends upon dimensions of the room, the height of the ceiling and number of light sources. To achieve uniformity, locations of lighting fixtures are approximately governed by the following rule:

Spacing between fixtures may be one and one-half times the distance between the horizontal plane at which uniformity is desired and the position which the light source itself occupies.

With indirect lighting the ceiling becomes the secondary or effective light source and the distance between a chosen horizontal plane and the ceiling is the maximum obtainable. Hence the spacing between indirect lighting fixtures may be the maximum. With suspended types of direct or semi-direct fixtures, the distance from the light source to a selected horizontal plane and the permissible spacing of fixtures decreases.

Uniformity is rarely accomplished with fixtures in large residential interiors, although in smaller rooms it is approximately effected. To illustrate, a living room 14′ x 22′ with an 8′ 6″ ceiling requires indirect fixtures spaced on 9′ centers to produce uniform illumination on a plane 30″ above the floor. This requires two rows of fixtures, three in a row. As a practical compromise of an obviously undesirable condition, the installation can be reduced to one row of three fixtures down its center axis. As a still more desirable compromise, the center fixture is dropped from the center row. Finally, when the two end fixtures of the center row are omitted and replaced with a single center fixture, the usual type of installation results. At the same time, the compromises illustrate how ineffectual is any such center fixture for providing uniform illumination throughout a room of this size. If, on the other hand, the room was approximately 9′ x 9′, or slightly larger, a reasonable degree of uniformity could be achieved from the single center fixture.

Localized lighting always introduces into a room some areas that are materially brighter than others, for its primary purpose is to supply higher values of illumination for specific visual tasks. The difference in illumination level between localized and general lighting does not introduce unpleasant or garish effects when an intensity ratio of local lighting to surrounding general lighting does not materially exceed a ratio of 10 to 1. However, this ratio is dependent upon the specific level of local illumination provided.

The lighting of any residential interior usually involves a judicious combination of at least two, and possibly three, methods of illumination to fulfill conditions of modern lighting standards. Provision for general illumination depends somewhat upon the extent of local illumination and is therefore more likely to be properly supplied in the majority of cases from a combination of fixture types.

In the majority of cases, applied wall or ceiling fixtures may provide an economic solution to the problem of the lighting equipment itself. Decorative lighting, which may also contribute somewhat to the general illumination, can be supplied from built-in fixtures in the form of coves or luminous ceiling or wall panels. Supplementary or local lighting is most conveniently supplied by portable lamps or, depending on the architectural design and furniture arrangement of the room, by applied wall fixtures or built-in elements.

A balance between sources of general and local illumination is desirable from both technical and decorative points of view. Both requirements can be fulfilled by first fixing locations and required quantities of local lighting. On this basis, the general lighting of the room can be determined.

SELECTION FACTORS OF GOOD LIGHTING FIXTURES

Design in lighting fixtures is a matter over which the architect can exercise an aesthetic discretion. But lighting efficiency of any fixture is determined partly by the fixture itself and also partly by the way it is used.

Portable lamps are divided into two types. One is primarily for attractive utility lighting; the second primarily for decorative lighting. The first is today well standardized, according to the principles of I. E. S. specifications, to deliver proper quantities and a desirable quality of light within given areas for a variety of visual tasks.

The decorative type of light is just what

its name implies. It should not be relied upon to add any appreciable amount to the general illumination nor should it be used exclusively to provide adequate illumination to local areas.

Applied wall and ceiling fixtures. Because applied wall and ceiling fixtures have so long been associated with the use of candles, oil and gas as illuminants, their technical development for electricity has only recently reached the necessary point of modern efficiency. In their present form, however, both wall and ceiling fixtures provide a satisfactory means of supplying both general and local illumination of certain kinds. They are, of course, easily installed and easily maintained. So far as design is concerned, these fixtures can be almost anything which the architect desires. The chief concern of the architect in selecting such fixtures touches upon their lighting effectiveness and efficiencies. And from this standpoint, all wall and ceiling fixtures are by no means equal.

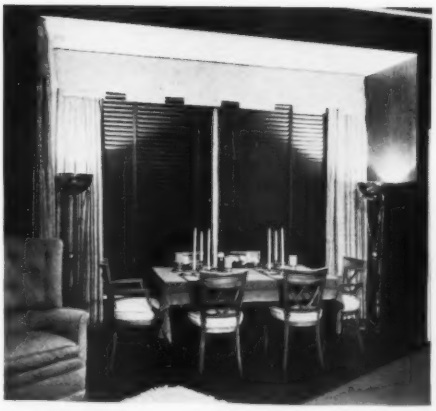
The diagrams on pages 68 and 69 indicate types of applied wall and ceiling fixtures which are particularly adaptable for use in residences. Notations with each explain the general characteristics of these fixtures and list acceptable wattages employed with various sizes. The majority of these fixtures are available in a variety of designs and are adaptable within the technical limitations stated to whatever special design the architect may desire.

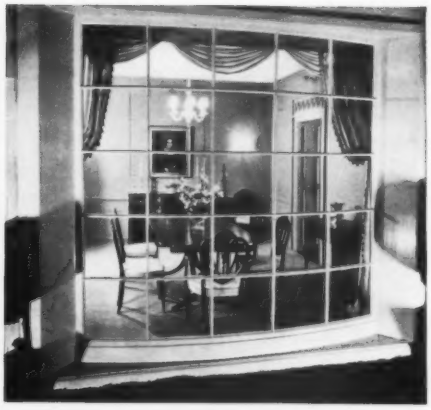
Built-in lighting is somewhat more costly than other lighting fixtures adaptable to residential use. Ordinarily two kinds will be employed in good residential lighting—ceiling coves in continuous strips or intermittent sections over window or door heads; and luminous panels which may be installed in the walls, the ceiling or in soffit areas. Each have limitations of efficiency and installation indicated as follows:

Lighting from coves and cove sections usually involves the ceiling as a matter of first importance. Residence ceilings are usually low and of single planes. Coves must be small to reduce conspicuousness, and, due to the limited space between the ceiling and the door and window openings, must be relatively close to the ceiling. These conditions usually prevent good uniformity of lighting on the ceiling and throughout the room—two primary characteristics of many well-designed systems of continuous cove lighting.

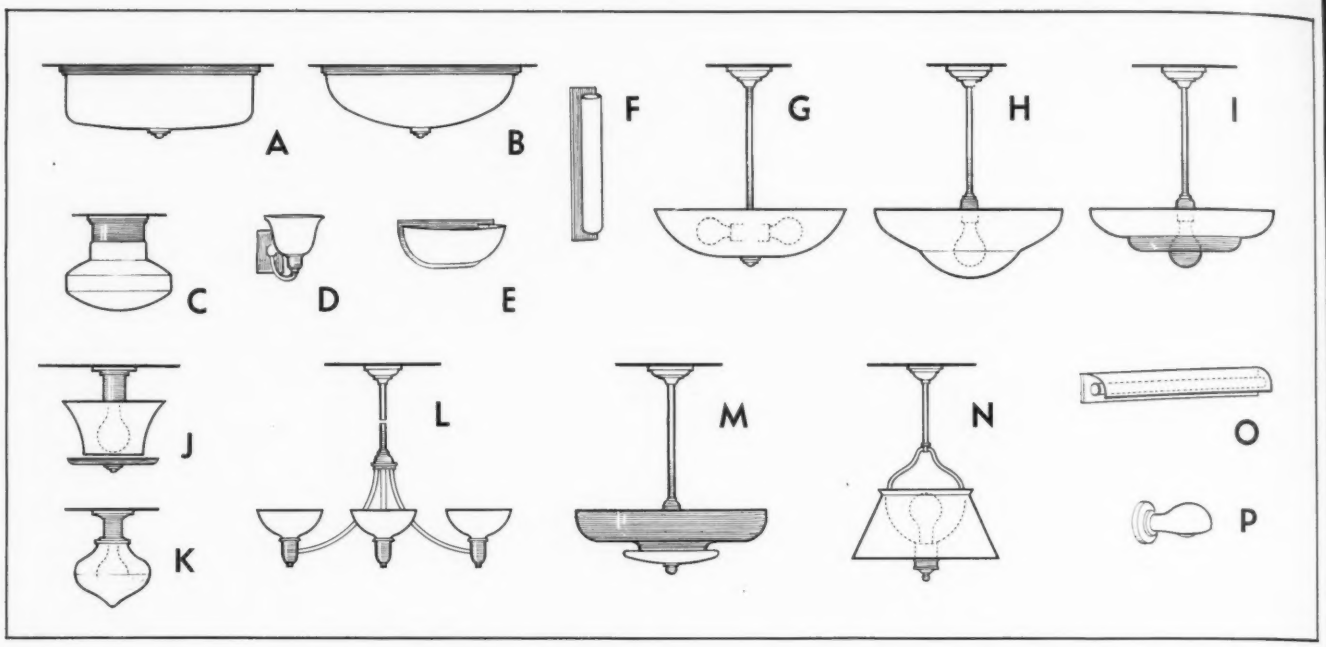
However, if intermittent or partial coves, or other arrangements simulating cove effects, are used, and the necessity of an evenly lighted ceiling is not present, the result may be entirely satisfactory. In this case, the distribution of light will not be uniform either on the ceiling or throughout the room. Further, secondary or decorative

(*Continued on page 70*)





Areas for work or play require higher illumination levels at centers of activity. Kitchens illustrated above show, at left, independent work lights; at right, combined work and general lighting. In game room, general illumination is provided by wall brackets, with supplementary local lighting from ceiling and floor fixtures.



Diagrams of lighting fixtures commonly available in a variety of designs

TYPES OF RESIDENTIAL LIGHTING FIXTURES

Types A and B. Shallow bowls fitted close to ceiling with straight or curved sides. Generally available in: *1.* Crystal etched or frosted glass —poor diffusion; produces brilliant harsh effects. *2.* White opal and ivory, cream or light amber opals—excellent diffusion; produces soft comfortable effects. In both types bulbs are close to the glass and multiple sockets are desirable to minimize spottiness. Spottiness cannot be avoided with crystal glasses, but can be virtually eliminated with opal glasses.

With two sockets pronounced spottiness results—two bright areas and two dark areas. In the 10″ size some spottiness exists with 3 sockets. In larger sizes 4 and 5 sockets are needed to avoid spottiness. Efficiencies of both types only fair.

Suggested wattage schedule:

Total Wattage	Diameter of Glass
60-75	10″
75-100	12″
100-120	14″
120-160	16″
160-200	18″

Type C. Opal glass enclosing globes in shapes ranging from cubes through elipsoids to spheres—all can be evenly lighted with a single lamp except shallow types which show a bright spot at the bottom. Efficiencies of these types are good.

Suggested wattage schedule:

Total Wattage	Diameter of Glass
60	7″
75	9″
100	10″
100-150	12″
150-200	14″

Type D. Wall brackets with full or partial cylindrical shapes of crystal etched, frosted and opal glass top—For low value decorative lighting or higher value utilitarian services. The small sizes produce high, uncomfortable brightness with all types of crystal etched and frosted glass. Brightness can be minimized by using glasses having good diffusion and maximum permissible diameter. Good utilitarian brackets with opal glass have shade diameters of 3½″ for 40-watts and 4″ for 60-watts. Double arm types may carry desired wattage (80 to 120) per fixture for general lighting without introducing unduly large single shades since the total wattage may be divided between two sockets using smaller lamps.

Type E. Bowls and partial bowls of either glass or metal—For decorative lighting or for moderate values of general lighting. For low surface brightness desirable in glass types, bowls should have higher density than those of types A, B, C. Lighting from a 40-watt lamp should be classified as decorative. Fixtures with a 60-75 and 100-watt lamp may furnish both decorative and utility lighting in general illumination.

Type F. Wall or ceiling fixtures for tubular lamps—Principal lamps are: 25-watt in two lengths, 5½″ intermediate base and 5⅝″ medium base; 40-watt medium base and Lumiline; 30-watt Lumiline 18″ long; 60-watt Lumiline 18″ long. Lighting effect is enhanced by shading lamps with a cylinder of diffusing glass. The 25-watt types require a shading cylinder of 3″ diameter; the 40-watt and 60-watt of 2″ diameter; and the 30-watt of 1½″ to 2″ diameter. The 30-watt white coated Lumiline lamp approaches a satisfactory value of brightness when unshaded.

Type G. Shallow bowls of glass or plastic for semi-indirect lighting and of metal for indirect lighting—Three, four and five sockets are preferred. As with types A and B multiplicity of sockets minimizes spottiness of glass or plastic bowls and also minimizes ceiling shadows of chain or center support.

Suggested wattage schedule:

Total Wattage	Diameter
75-100	12″
100-150	14″
150-250	16″

Type H. Similar to G except that vertical position of lamp requires greater bowl depth for proper concealment of light source. Single lamp types provide greater amounts of light for a given wattage. For example, four 25-watt lamps provide 26 per cent less light than one 100-watt lamp due to the higher efficiencies of higher wattage lamps.

Type I. Shallow indirect suspended fixture for silvered bowl bulb lamps. Lamp bulb partially protrudes through bottom of fixture allowing a minimum of vertical fixture depth. Excellent spread of light is provided on ceiling from properly designed fixtures.

Type J. Close ceiling fixture semi-indirect and indirect—Minimum depth preferred to improve efficiency of fixture and to enlarge normally small ceiling spread of light. Available in wattages of 100-150 with shade 12″ in diameter.

Type K. One-piece glass semi-indirect close ceiling fixture. Upper part of shade usually crystal, fluted or ribbed; bottom half, white or tinted enamel. Lamp bulb should be hidden by enameled shade, but should not be too close to the bottom.

Suggested wattage schedule:

Total Wattage	Diameter of Glass
60	7"
75	9"
100	10"
100-200	12"
150-200	14"

Type L. Multiple-bowl semi-indirect and indirect fixtures with one, three and five sockets. Types with shallow bowls supply greater light spread and higher efficiencies. When bowls are essentially clear crystal base with applied color or frosting and color, uncomfortable brightness is produced with 40 and 60-watt lamps. Diffusing plastics and homogeneous diffusing glasses will reduce brightnesses to comfortable levels with same lamp sizes. Low brightness with 40-watt lamps is preferable. Single lamp types should properly conceal a 60-watt lamp.

1 light — 60 W
3 light — 120-180 W
5 light — 200-300 W

Type M. Metal bowl with glass bottom plate. Socket arrangements similar to type G. Glasses of varying densities can increase lighting value immediately below fixture to produce added local illumination within a given area, as a dining table. When fixtures are close to the ceiling internal lamp shielding is necessary to prevent glare through bottom plate with poor diffusion. As fixture is lowered, necessary shielding may be lessened.

Suggested wattage schedule:

Total Wattage	Diameter
75-100	12"
100-150	14"
150-250	16"

Type N. Semi-indirect type with high downward light component for general and localized lighting employing essential elements of I.E.S. lamp types. Outer shade should come below bottom of inner diffusing bowl. Two sizes are generally available. Inner bowl with 8" top diameter employs a 100-watt lamp. Inner bowl with 10" top diameter takes a 100- 200- 300-watt three-light lamp.

Type O. Vertical or horizontal wall fixtures for tubular lamps, similar to Type "F". For use particularly at kitchen work counters under wall cabinets, over kitchen range, in built-in furniture used for reading and writing. Shade should be metal, opal glass, or formed of opaque materials when built-in, lamps 40-60 watt for localized illumination.

Type P. Wall bracket with hemispherical shade, usually of opal glass. Same uses as Type "O", lamps 40-60 watt for localized illumination.

TABLE II — SUGGESTED SCHEDULE OF FIXTURE TYPES, SIZES AND CAPACITIES FOR RESIDENCES

ROOMS	A* & B*	C	D**	E**	F	G-H-I-J	K	L	M & N	O & P
Hall	10"– 60– 75W 12"– 75-100W					12"– 75-100W		1 light 60W		
Living Room	14"–100-120W 16"–120-160W 18"–160-200W		Double-arm type 40–60W each socket	60-100W		14"–100-150W 16"–150-250W		5 light 200-300W		Built-in furniture 30–40–60W
Library						14"–100-150W 16"–150-250W		5 light 200-300W		Built-in furniture 30–40–60W
Dining Room			Double-arm type 40–60W each socket	60-100W				5 light 200-300W	14"–100-150W 16"–150-250W	
Breakfast Room								3 light 120-180W	12"–75-100W	Built-in furniture 30–40–60W
Kitchen		Center ceiling 10"–100W 12"–100-150W ——— Over sink and range 7"–60W					12"–100-150W 14"–150-200W			Under wall cabinets— Over ranges 40–60W
Bathroom		9"– 75W 10"–100W	40–60W each side of mirrors		30W each side of mirrors ——— Usually used with Types C and K		9"– 75W 10"–100W			P type one. Pairs at mirrors; dressing tables 40–60W
Bedroom				60-100W		12"–75-100W		3 ligh 120-180W		Built-in furniture 30–40–60W
Dressing Room	10"–60– 75W 12"–75-100W				60W each side of mirrors ——— Usually used with Types C and K					Pairs at mirrors; dressing tables 40–60W
Basement (General)		9"– 75W 10"–100W								At work benches, etc.—40-60 watt
Recreation Room	14"–100-120W		Double-arm type 40–60W each socket	60-100W						
Laundry		10"–100W 12"–100-150W 14"–150-200W								
Garage		9"– 75W 10"–100W								At work benches, etc.—40-60 watt

* Used where ceilings are low; also in small areas.

** When used to create general room illumination of a low or medium value, provide at least four fixtures in balanced pairs on opposite walls. Where the long dimension of room materially exceeds the short dimension, use balanced pairs on each of the four walls.

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WHAT TO LOOK FOR IN A LIGHTING FIXTURE

1. Lamp bulbs must be concealed. Exposed bulbs produce glare. Use metal, glass, plastics or other diffusing material or shades to shield lamps from view.

2. Diffusing material. Glass or plastics must be sufficiently dense to conceal the contour or bright spot of the lighted lamp. Where fixture is mounted low or in direct line of vision, brightness of diffusing surface should be comparatively low in value. Where fixture is mounted high out of line of vision, allowable surface brightness can be much higher.

3. Physical dimensions of fixtures. Fixture should be so constructed as to carry lamps of size and number needed to produce desired lighting result. For example, ceiling fixtures for general lighting should be capable of housing a total of from 100 to 200 watts (depending upon room size) in single or multiple sockets. Wall urns designed for general lighting should carry a minimum of 60 to 100 watts.

4. Construction should be such that lamps may be replaced without dismantling fixture. The portion of the fixture for controlling or redirecting the light should be so designed as not to be unduly inefficient.

5. Simplicity of design is desirable except in cases where the lighting fixture is a dominant element of room decoration. Fixtures for houses of traditional architecture should be designed first for efficient modern lighting, then adapted to a form in harmony with the architecture. Good illumination rarely results from merely copying fixtures originally designed for candles, or gas and replacing those illuminants with electricity.

Balanced illumination in a living room; wall brackets and I.E.S. type three-light lamp.

Local lighting in limited space at work area; general illumination provided by ceiling fixture.

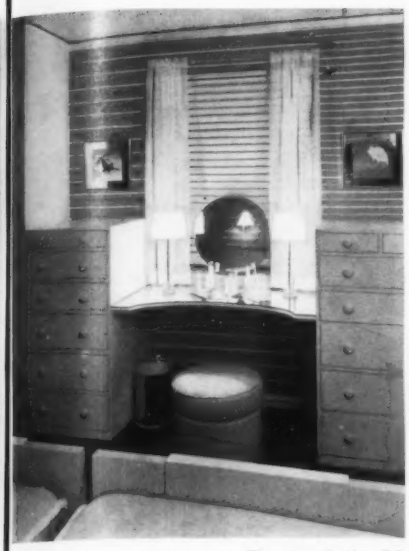
Bed lights sufficient in intensity for reading and properly directed.

lighting will be provided to complement more localized effects of higher levels of illumination. For example, concentrated light on the dining table may be entirely agreeable when supplemented with the partial or intermittent coves placed over windows, doors, or even in wall spaces.

Both continuous and partial coves supply the smoothest effect when equipped with Lumiline lamps. The 30-watt 18" lamp may be placed end to end to produce the effect of an uninterrupted source of light. Both the 30- and 60-watt lamps may be used for this service. The 30-watt lamp is usually preferred since the wall brightness immediately above the cove is kept more nearly in order with the most pleasing effect.

Two principal arrangements of coves are practical in the residence. One is applied similar to a molding of plaster or metal. The other requires a lamp-concealing compartment back of the wall line. The latter may be used to minimize the so-called "back splash" of light immediately above the cove. In this form the wall below the cove opening may be in the same plane as the wall above where no "back splash" occurs; or the lower wall may be set ahead of the upper wall to produce directed light on the upper wall as well as the ceiling. All cove interiors should be white to insure good reflecting value. Cove designs which allow easy removal of the wiring channel as well as the lamps provide a simple interior to clean or refinish. Flat metal wire molding with built-in receptacles for lamps provides one means of achieving this result.

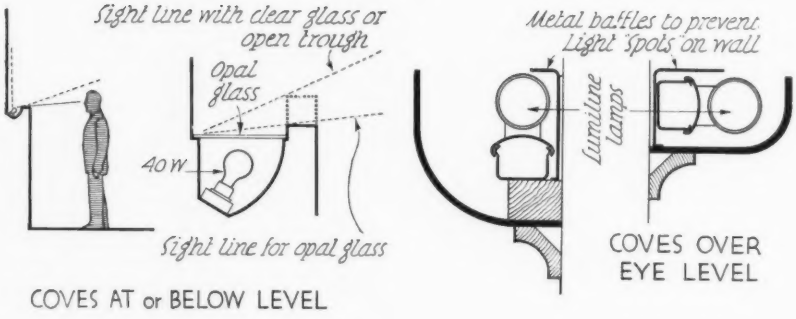
Luminous panels will normally be placed in partitions or in spaces between the ceiling and the floor above. These two conditions suggest two depths of insert boxes for



Three methods of lighting dressing tables, light being concentrated upon person seated before table and not upon mirror. Especially important is the elimination of glare. Center installation is best.

At left, flush ceiling light providing directed or focused illumination, supplemented by portable fixture. Center and right, illumination of bathroom areas intended to supplement general illumination.

At left, general exterior illumination of an entrance is better than small spotty lights. Center, a small ceiling bowl lights both entrance hall and stairs. Right, closet is lighted by ceiling fixture. Jamb light helps mirror viewing.


Sight line with clear glass or open trough
Opal glass
40 W
Sight line for opal glass
COVES AT or BELOW LEVEL
Metal baffles to prevent Light "spots" on wall
Lumiline lamps
COVES OVER EYE LEVEL

Cove lighting is useful more for decorative effect than for general or local illumination except in restricted areas, unless excessive wattage is employed. Illustrations above are good examples of such decorative lighting. The one on the left has built-in lighting strips, one over the bay window, the other a decorative strip over the mirrored mantel. Drawings illustrate the necessity of concealing the light source. Baffles shown serve to reduce glare of light reflected from immediately adjacent wall areas.

practically all of this work One for use in walls could be 4″ deep and the other for ceilings or soffits could be 9″ deep.

For wall panels in an insert box 4″ deep *centers of lamp bulbs* should not be spaced more than 5″ apart to avoid spottiness. The maximum lamp size with which this is possible, using double end to end receptacles for closest spacing, is the 40-watt lamp. The glass width may be five to six inches and retain evenness of effect. As this width is exceeded materially, the sides of the panel will dim and other rows of lamps are necessary to maintain reasonable uniformity. For example, a single panel from ten to twelve inches square would utilize four lamps spaced not more than 5½″ apart.

In the above cases, the lamps are placed as far as possible from the glass, positioned with their long dimension parallel to it. Actually a panel with 40-watt lamps would ordinarily be unpleasantly bright if used in or near the line of vision. For purely decorative wall lighting, panel lamps can be 10-watts each to produce a value of about 30-watts per 100 sq. in. of glass. If used overhead with proportionate increase in panel area, this value could be increased to about 60-watts per 100 sq. in. of glass to produce lighting of about 10 to 15 footcandles for casual reading or for work centers in the kitchen.

For ceiling or soffit panels, an insert box 9″ deep permits spacing of lamps up to 14″ although 12″ is more desirable. With this depth and spacing even lighting is possible with a single row of lamps from a glass face 12″ to 14″ wide. In a panel 24″ square, four lamps would be used for evenness. Such panels are ordinarily used for localized lighting of a specific area beneath them and accordingly should supply higher levels of illumination. For reasonable brightness and substantial values of illumination, approximately 60-watts per 100 inches of glass surface are required.

Interior finish of the light box plays an important part in the delivered amounts of light. Such finishes as porcelain enamel and oxidized aluminum and alzack provide both high reflecting values and permanence.

As an indication of the effectiveness of well-designed, simple, flush-type units using flashed opal glass, a few results of delivered light are given below:

Glass Dimensions Length	Width	Number of Lamps	Size of Lamps	Footcandles*
34″	9″	3	60-watt	15
57″	8″	5	60-watt	20

*Value of illumination delivered on a horizontal plane 48 inches below the surface of the unit.

The factor of distance is also important in relation to illumination value. The rate of decrease with distance is indicated in the following table for a panel 34 inches long and 9 inches wide containing three 60-watt lamps properly spaced:

Distance from glass panel to object lighted	Illumination delivered on object—Footcandles
48″	9
36″	14
24″	23

When moderate amounts of general lighting are produced by luminous panels, low brightnesses of glass area result and the most pleasing effects are produced. This results when 50 to 100 watts are used per square foot of glass. Glass areas of considerable size are necessary because efficiency of panel units is usually somewhat less than fifty per cent.

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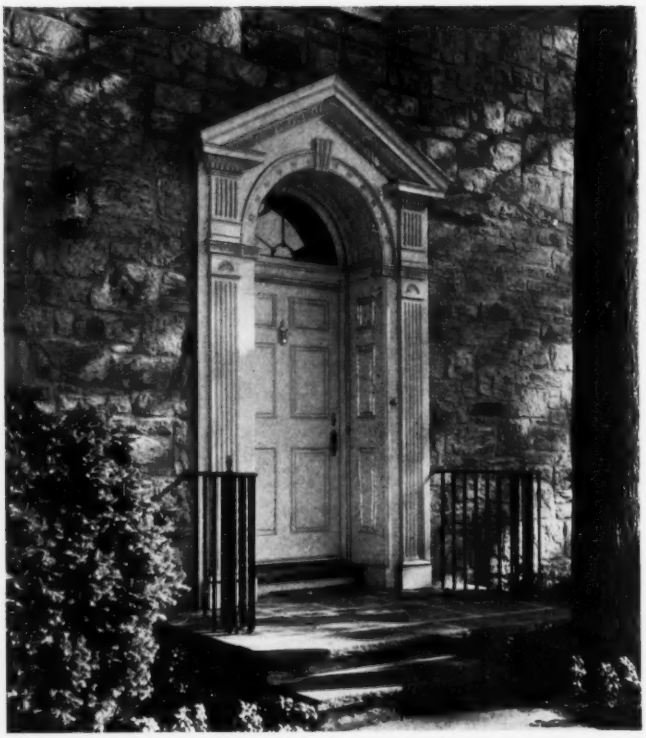

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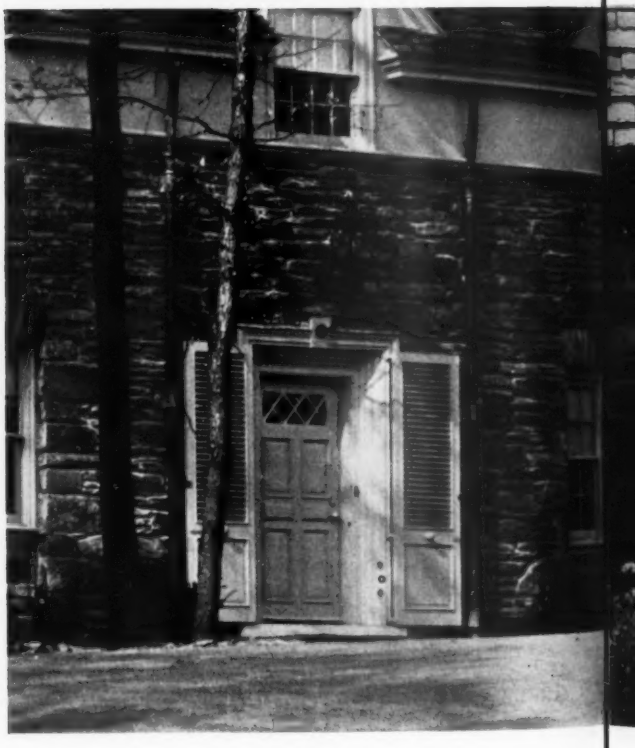

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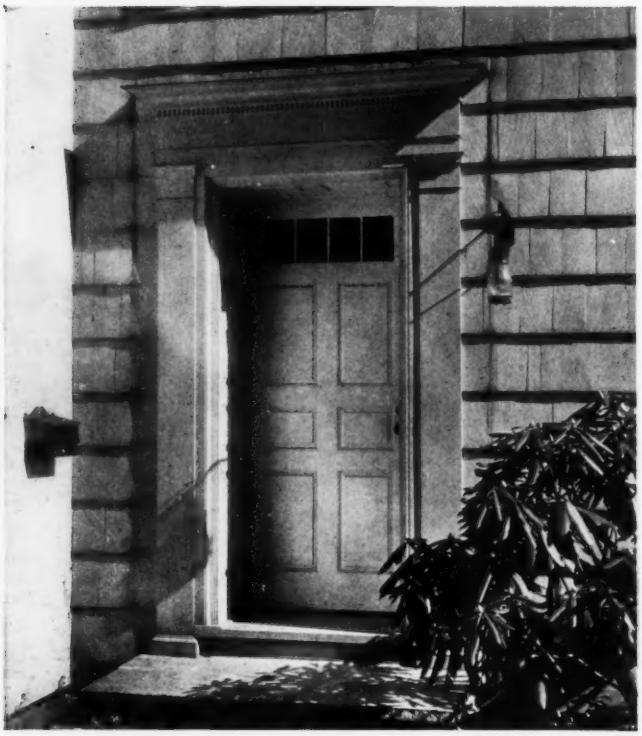
Locust, N. J.
Brutus Gundlach

Larchmont, N. Y.
Clarence C. Merritt; Urbain G. Turcot

XUM



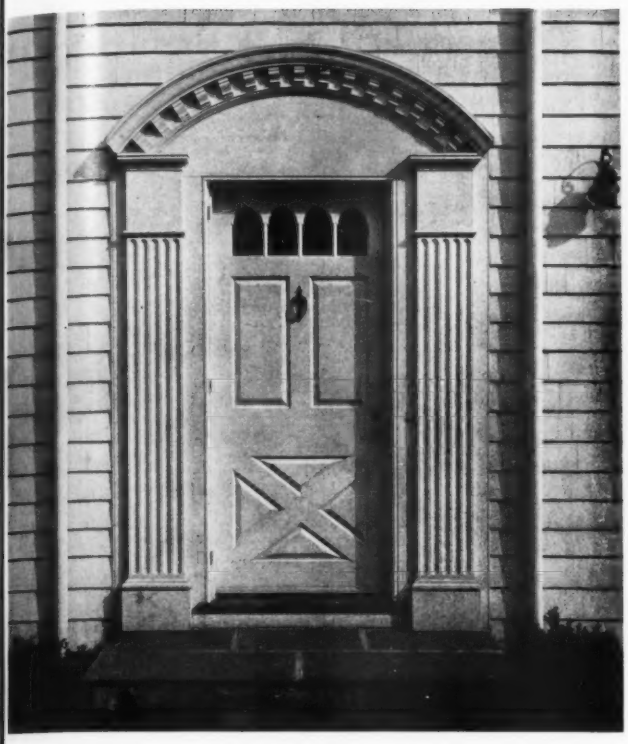
Danbury, Conn.
William Webb Sunderland

Rowayton, Conn.
Margaret R. Hoyt

Southampton, N. Y.
Polhemus & Coffin

Long Ridge, Conn.
Coggins and Hedlander

XUM



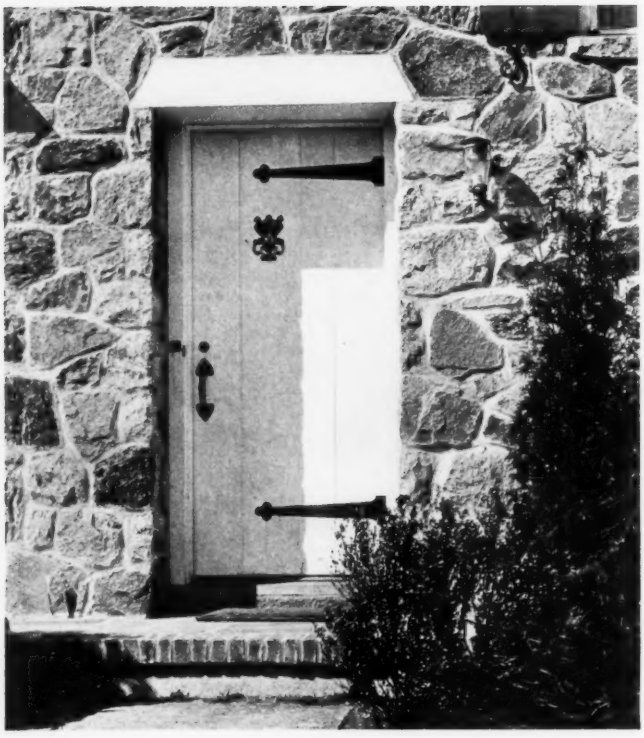
Westport, Conn.
Burton Ashford Bugbee

Dallas, Tex.
Thomson & Swain

Weston, Conn.
Coggins & Hedlander

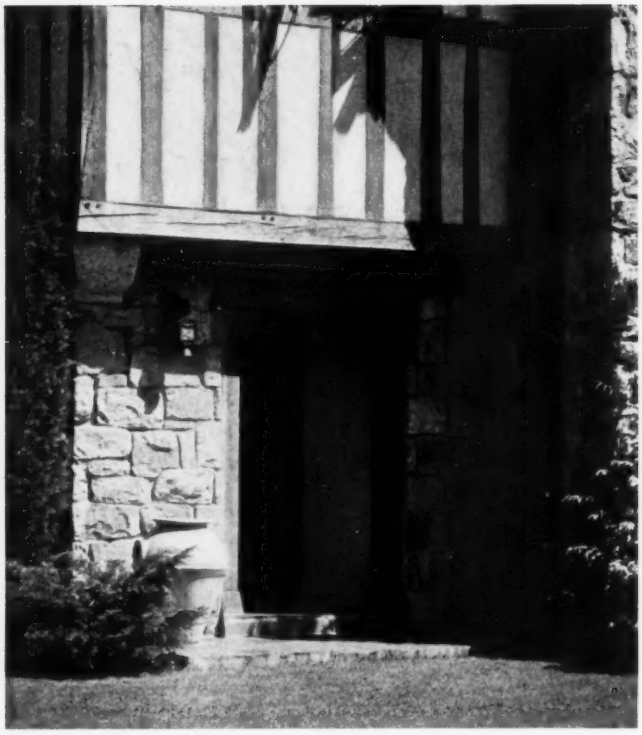
Charleston, S. C.
Dwight James Baum for restoration

XUM



With pre-cast concrete lintel
painted to match wood work

Flushing, N. Y.
John Oakman



Greens Farms, Conn.
Walter B. Kirby

Garden City, N. Y.
Olive F. Tjaden

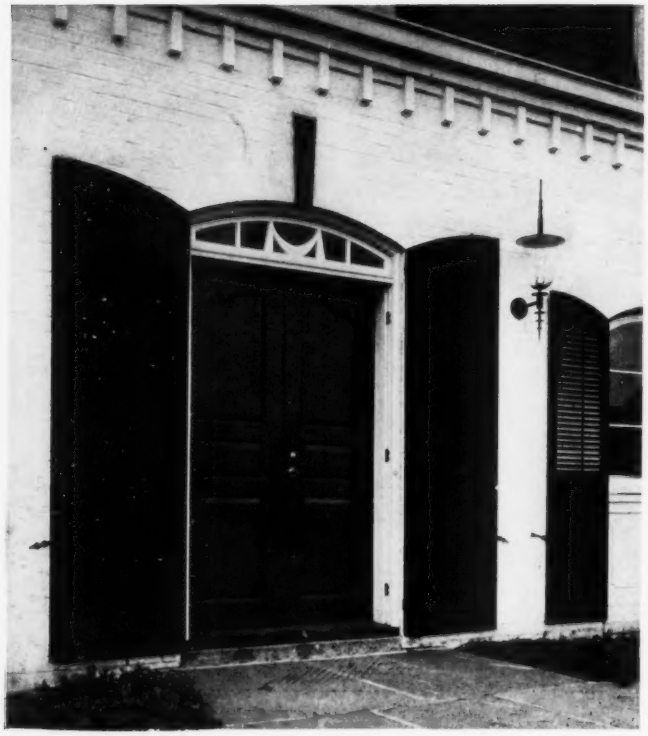
Bedford Village, N. Y.
Godwin, Thompson & Patterson

Syosset, N. Y.
Roger H. Bullard

New Haven, Conn.
Frank J. Forster; R. A. Gallimore

Newark, N. J.
Guilbert & Betelle

XUM



New Haven, Conn.
Douglas Orr

Englewood, N. J.
Aymar Embury II

Portland, Ore.
Herman Brookman

Syosset, N. Y.
Morris Ketchum; George W. Kosmak Jr.

XUM

Bedford Village, N. Y.
Godwin, Thompson & Patterson

Pelham, N. Y.
Pliny Rogers

Garden City, N. Y.
Reinhard M. Bischoff

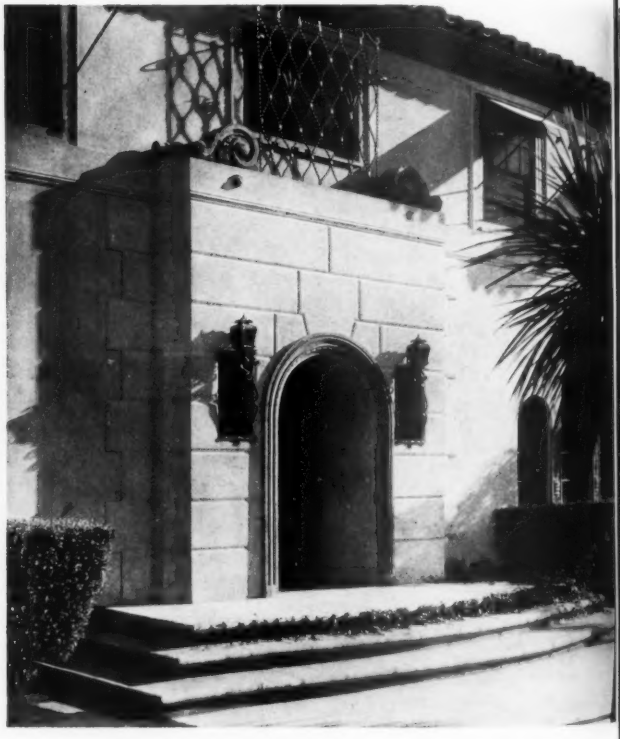
Fairfield, Conn.
Louis C. Rosenberg

XUM

Beverly Hills, Calif.
John D. Atchison

Washington, D. C.
Horace W. Peaslee; Gertrude Sawyer; J. H. Lapish

Hollywood, Calif.
Pierpont and Walter S. Davis



Santa Monica, Calif.

XUM

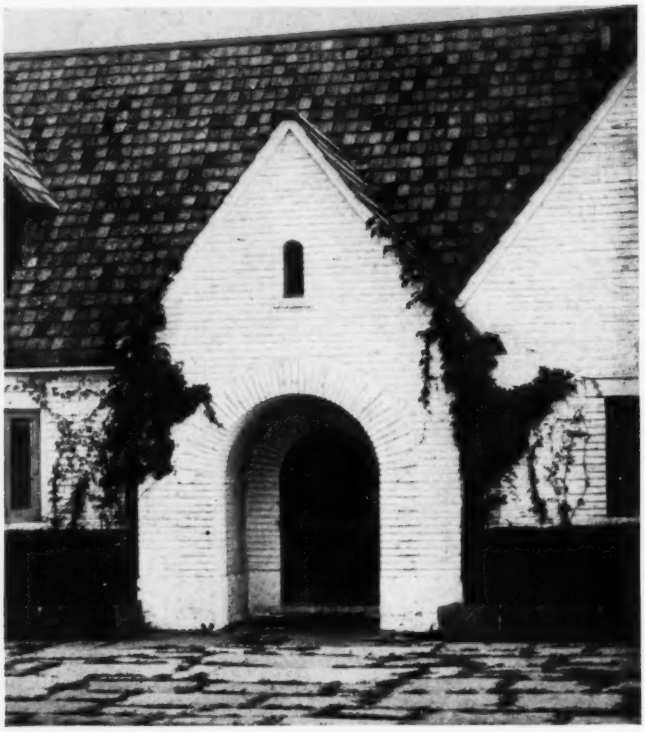
Los Angeles, Calif.
Roland E. Coate

Hackensack, N. J.
Wesley S. Bessell

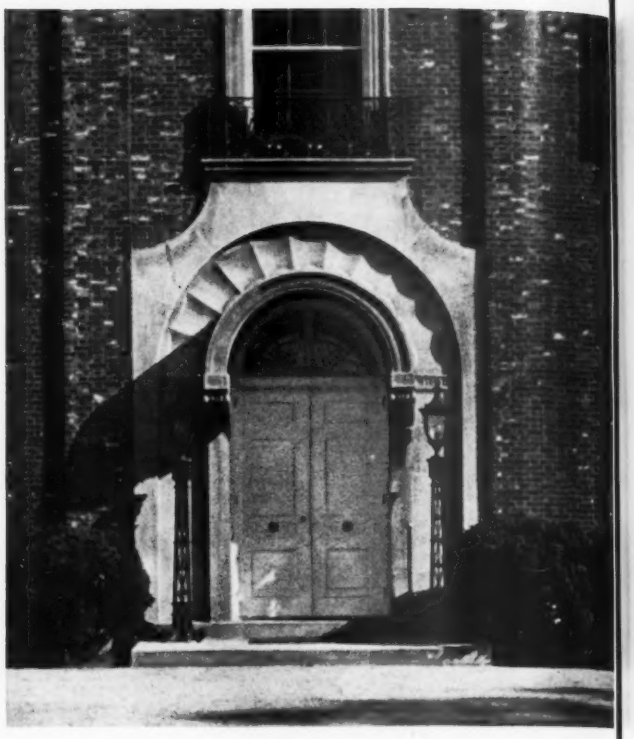
Hewlett Manor, N. Y.
John C. Greenleaf

Colorado Springs, Colo.
William E. and Arthur A. Fisher

XUM



Newport, R. I.
Delano & Aldrich



Mill Neck, N. Y.
Walker & Gillette

New London, Conn.
Frank J. Forster

Darien, Conn.
Daniel D. Merrill

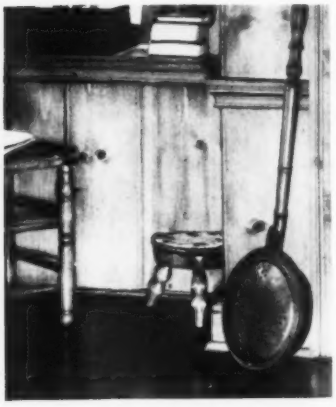
XUM

FAVORITE FEATURES

Common problems of design in everyday practice—how the results look and how the drafting room detailed them

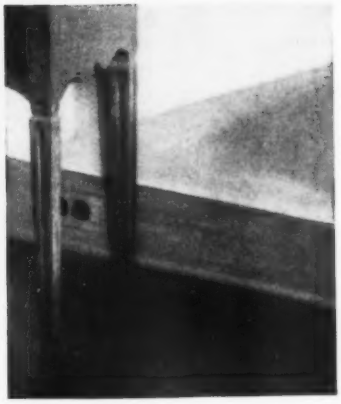
In addition to detail drawings of the examples illustrated, there are included a like number of details that show still further variations at the junction of wall and floor.

Baseboards



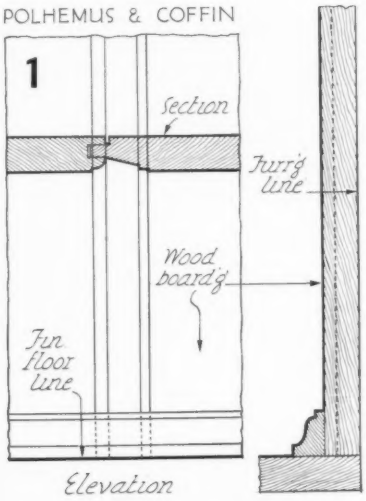
1

2



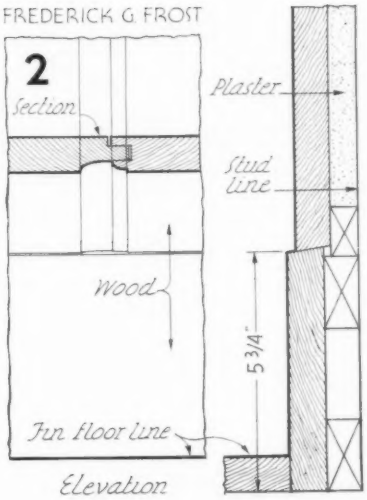
3

POLHEMUS & COFFIN



Elevation

FREDERICK G. FROST

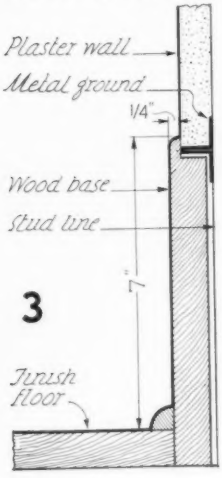


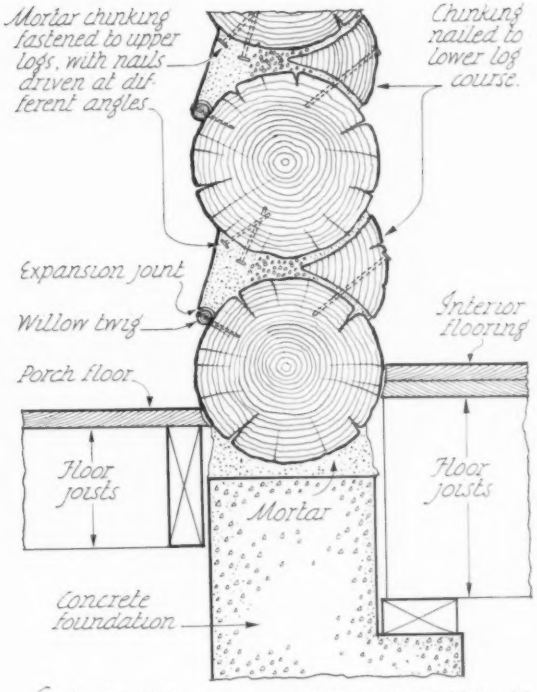
Elevation

NOTE

All drawings at 3" equals 1'-0" unless otherwise noted.

FRANK J. FORSTER

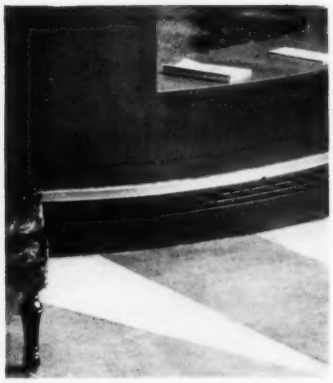




Scale 1½"=1'-0"

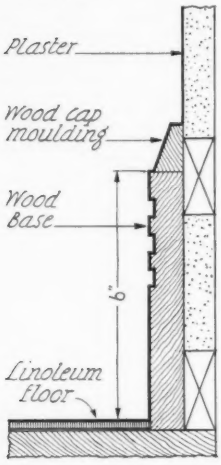
GEORGE W. KOSMAK, JR.

XUM



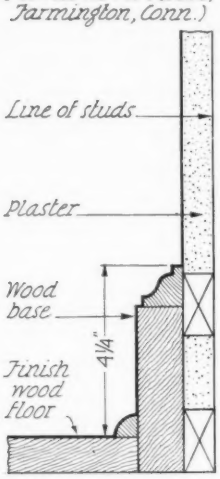
4

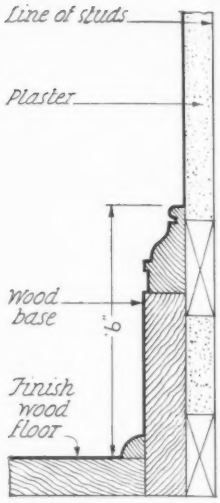
ELISABETH COIT



4

(Cowles Lewis House, Farmington, Conn.)





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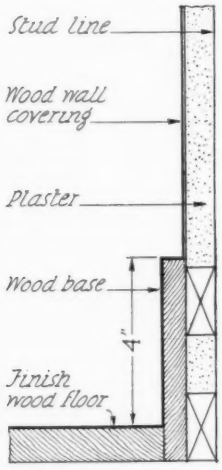
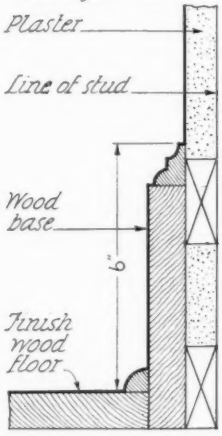
JAMES EPPENSTEIN

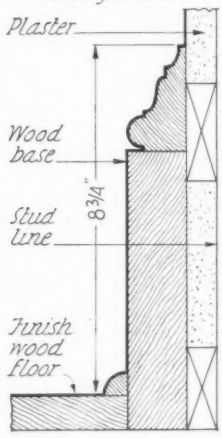


5

(Le Moyne House) Washington County Pennsylvania

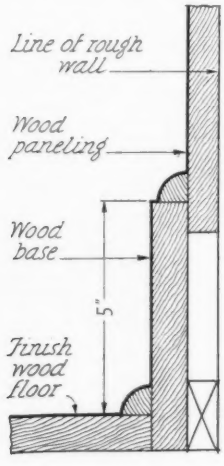


(Dorsey House) Washington County Pennsylvania



6

LAWRENCE J. KLEIN



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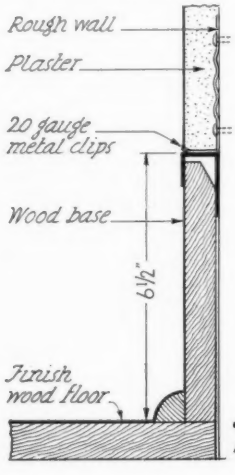
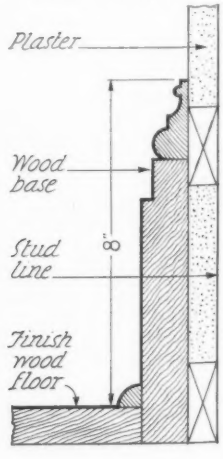
N. CHESTER SORENSON



7

(Kingsley House) New Haven, Conn.



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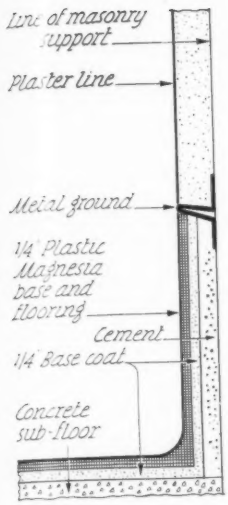

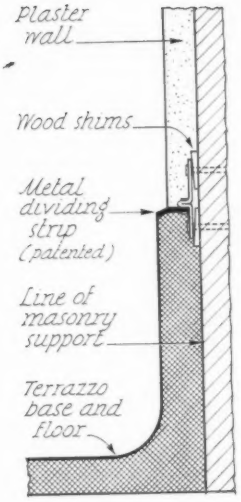

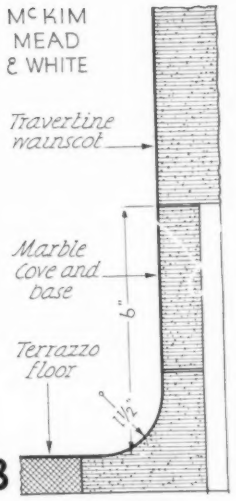

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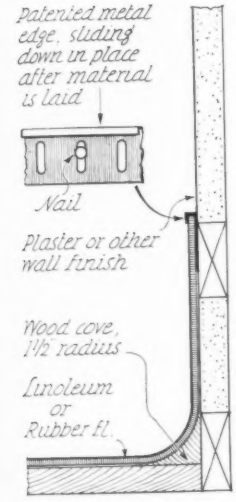
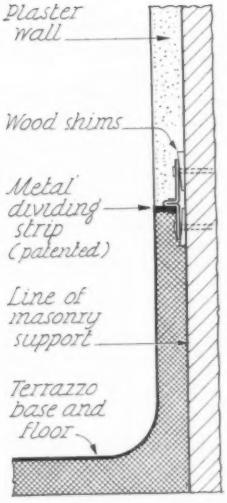
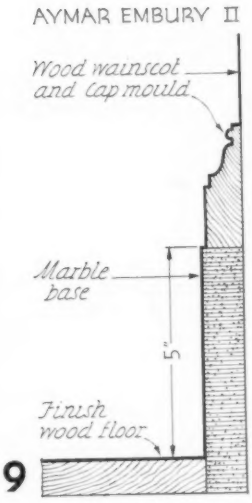
8

9


Patented metal edge, sliding down in place after material is laid
Nail
Plaster or other wall finish
Wood cove, 1½" radius
Linoleum or Rubber fl.





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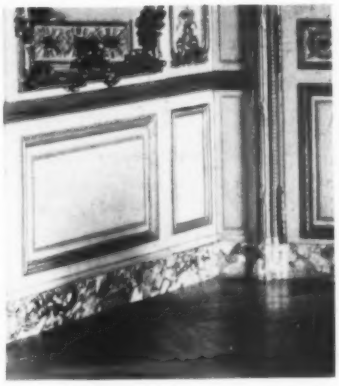

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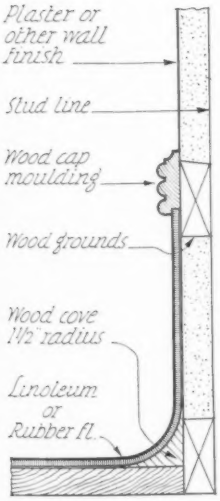

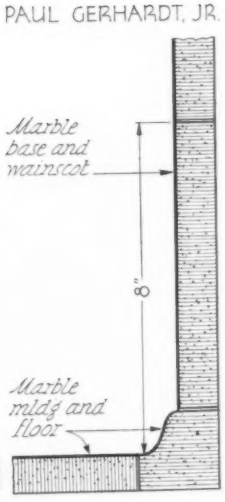

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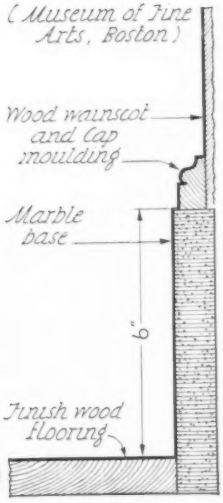

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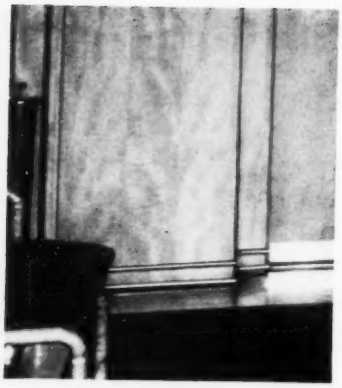
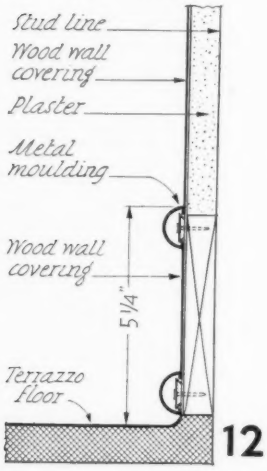
11

XUM



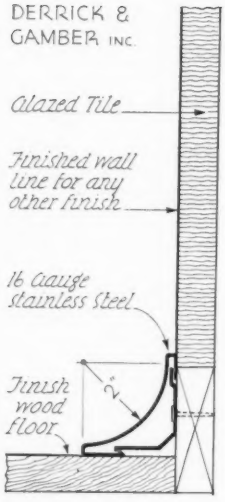
12

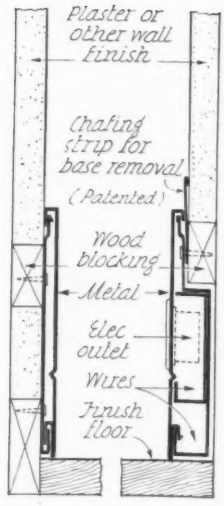
G. McSTAY JACKSON



12

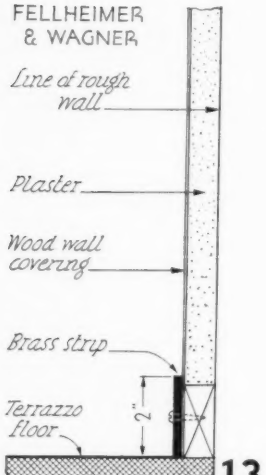
DERRICK & GAMBER INC.





13

FELLHEIMER & WAGNER



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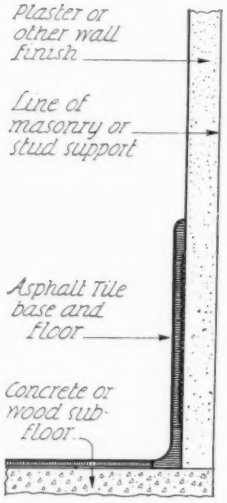

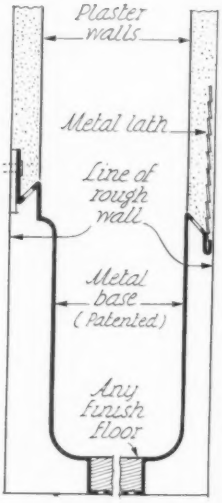

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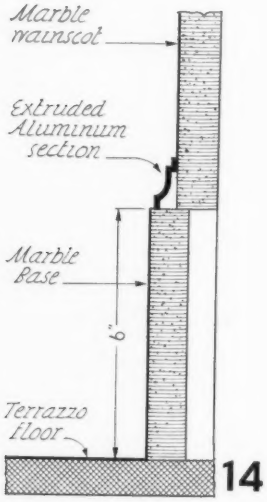

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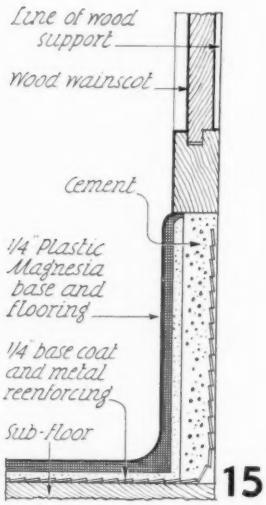

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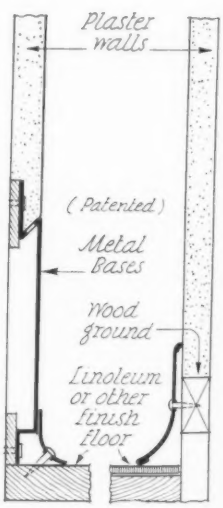


THE DIARY

Henry Saylor

Pittsburgh, Thursday, April 1.—Dropped in to see Henry Hornbostel's Allegheny County Soldiers' Memorial to verify a rumor that it had been freshly decorated. It has, under W.P.A. They tell me there are now fifty-six colors on the upper part of the main auditorium. I didn't count them.

With Ralph E. Griswold, landscape architect, who is now director of Pittsburgh's parks and playgrounds, to see what he has been doing with the Phipps Conservatories. When the first of these was presented to the city, in 1893, there was mighty little general knowledge and public interest in ornamental horticulture in this country. We have gone a long way in the last half century.

They had an exciting time in these conservatories last February, when a young tornado took much of the glass off the top and some of the framework, uncovering rare old trees and palms that do not thrive in snow and wind. However, with an emergency crowd, plenty of tarpaulin, some smudge fires, and the like, most of the rare collections were kept alive.

Friday, April 2.—Back in New York after having found both Detroit and Pittsburgh fairly active as to the architectural offices. Detroit, however, was suffering a temporary setback and halting of most building projects on account of the "sit-down" strikes and general industrial unrest. It becomes more and more evident that a disturbance in any one part of our social framework immediately affects every other part.

Saturday, April 3.—We do not often have really heated discussions in the New York Chapter meetings, but we had one the other day over the proposed alterations to the United States Capitol. Egerton Swartwout sketched the long and checkered history of the building, and argued for the bill which, a day or so ago, passed the Senate, and is now to come before the House. Dr. Leicester B. Holland and Lorimer Rich had come up from Washington to take the opposite side of the argument. The bill carries with it an appropriation of four million dollars, and provides "that the central portion of the Capitol shall be extended, reconstructed, and replaced in substantial accordance with either Scheme A or Scheme B of the architectural plan" submitted with the Carrère & Hastings report in 1905. The debate waxed warm, as it usually does on this subject. Unfortunately, as is quite frequently the case, a comparatively small part of the membership attended the meeting—the New York Chapter never does succeed in getting out on any one occasion half of its members. For this reason there was a plea that the meeting refrain from going on record at once, submitting instead a ballot to the full membership. In view of the fact that the members would not have had the benefit of the argument and historical record, however, a resolution was eventually passed expressing the New York Chapter's protest against the alteration of the Capitol. The New York Chapter thereby falls in line with the Boston Chapter, the Washington Chapter, and the Philadelphia Chapter, with many other chapters still to be heard from.

Monday, April 5.—Dean Cornwell showed me his new Raleigh Room at The Warwick this evening. Two large murals, one of three panels, recall somewhat the manner of the Florentine painters in using gold and silver with the color. A series of lunettes in silver and dark blue is particularly effective, and Cornwell has given an individuality to the room by adding a decorative frieze, setting forth the imaginary coats of arms of contemporary leaders in New York City's many-faceted life of today.

Wednesday, April 7.—I had a preview the other day of the New York World's Fair Exhibition for the public, on the ground floor of the Empire State Building. Mrs. Joseph Urban is in charge of it, with its many beautiful models showing lighting effects by day and by night, larger scale models of the buildings already designed, and a progress map on which work that is being done will be recorded from day to day. When the Exhibition was opened to the public, it was almost impossible to get within a block of the place.

Thursday, April 8.—Pierre Blouke up from Washington in his never-ceasing efforts to help the architectural profession find a way to serve the small house client. Through the constructive influence of the Home Loan Bank system, the lending institutions have been fairly well convinced that their loans should be safeguarded both by good design and proper supervision of construction. Through these lending organizations the public will soon learn the same lesson. At the moment the architect himself seems to be the weak link in the chain. His attempt to organize a system of providing architectural service in this field has, in many localities, been largely abandoned with the return of building activities. It is always easier to skim the cream off the mixture than to take the milk as a whole. It is only when depression hits us that the milk looms up as a necessity—and then the proper time for organization has passed.

Friday, April 9.—K. P. Billner, the engineer who invented "Aerocrete," put on today in his laboratory a demonstration of a new technique in building interior partitions and a monolithic roof for low-cost residential work. Forty or fifty engineers, builders, architects, and housing experts came to see what can be done through the simple expedient of taking the water out of concrete immediately after the molds have been poured. The process is one to be explained more in detail elsewhere. In Mr. Billner's earlier demonstrations at Yale and in his own laboratory here, various applications of the vacuum system have been revealed during the last year or two—each a constructive step leading to wider vistas of structural and economical possibilities. It seems strange indeed that in all the centuries that concrete has been known and used, no one heretofore has hit upon this idea, which seems rather an obvious desirability: concrete to be deposited must be mixed with a surplus of water, which water certainly weakens the product; why not take it out at once rather than trust to the slow and uncertain process of evaporation? And the idea, of course, is all the more feasible since the application of a suction to withdraw the water automatically brings an atmospheric pressure of about ten pounds per square inch to the job of compressing concrete in the molds.

Saturday, April 10.—The Guggenheim Fellowship awards were announced the other day—sixty-one of them, with a total value of $130,000. It is sad to note that those who pass upon the merits of applications for these Fellowships apparently are not in sympathy with architectural research. Some years ago there were usually several awarded to architects for special study, but the number seems to have diminished, until this year there are none. The painters, musicians, philosophers, geologists, dramatists, astronomers, photographers, psychologists, biologists, and anthropologists are recognized generously, but apparently the Guggenheim committee of selection believes that we have nothing further to learn in architecture.

Tuesday, April 13.—Off on a flying survey by motor with William F. Lockhardt, to see what sort of houses people are building in Connecticut, Westchester County, and northern New Jersey. It was an encouraging experience, for there is certainly very much in evidence a better type of design than we have seen for some years. I was particularly struck by the ingenuity that has been put into the use of concrete or cinder blocks.

They are not often being used as 8″ x 16″ blocks in the hackneyed coursing. Frequently an ashlar wall results from the use of several sizes, but a simpler way of breaking the monotony is to use with 8″ x 16″'s an occasional course 4″ high and sometimes also 6″ high. Frequently the blocks are painted with cement paint, but in several examples we found evidences of Alfred Hopkins' notable experiments in producing really beautiful block textures. In some cases he uses an aggregate in the block face that contains many small pebbles. The molds are removed before the set has become too hard, and a spray of water reveals these pebbles. Again he tints occasional blocks in several slightly differing shades of the same color, using a penetrating stain while the block is still moist.

Thursday, April 15.—Howard A. Gray, director of the Housing Division, P. W. A., points out that in the allocation of dwelling units at Techwood in Atlanta, particular care was exercised to see that these units fell into the hands of those for whom they were built. "When private enterprise can house those families under safe and wholesome conditions, we will have absolutely nothing to do with them." Of the first twenty-four families signing leases, sixteen have incomes of $20 weekly; six have incomes of $22.88; one, $27.80; and the other, $30.

Friday, April 16.—G. Frank Cordner tells me of a curious incident that happened in the Greenbelt project near Cincinnati. There are about 450 family units under construction, in various stages. Recently the night watchman discovered a fire, immediately ran to put in a fire call, and returned to find that the fire was out. What happened was this: the heating system, being forced to warm up the building in preparation for the plasterers, ignited some combustible material in the cellar, and the fire soon found its way up the air space surrounding the chimney. By the time it reached the second floor the heat was sufficient to melt the solder in a copper tube fitting, blowing out a temporary nipple, and putting into effect an unpremeditated sprinkler system which doused the fire.

Monday, April 19.—The way to increase one's knowledge is to make a public statement, and have it refuted or corrected. Speaking of the Code Napoleon, as we were recently, David R. Brown, a Montreal architect, tells me some more about it.

"In 1760, when France ceded to Britain that part of Canada now the Province of Quebec, French settlers were left in possession of their laws and customs, the free practice of their religion; their own citizens were named the Judges of their civil disputes, and their language made official with the rest of Canada—but there was no agreement in the treaty between the two countries that this should be so.

"The Code Napoleon, which was then the law of French Canada, has now been incorporated into the Civil Code of the Province, and many of the old clauses still remain—amongst them the one holding the architect and builder jointly responsible for ten years. This has recently been reduced to five years.

"Quebec Province is the only part of Canada in which the architect is held responsible, and in time it is hoped that the responsibility at least will be divided, the architect assuming responsibility for the correctness of his plans—the builder for the structure."

Tuesday, April 20.—The word "hanging," used in connection with the proper distribution of the elements comprising the annual Architectural League Show, comes to have a sinister and oblique meaning for those of us who are saddled with the job. Several years ago the men who had undertaken to make a presentable showing out of a heterogeneous mass of photographs, mats, frames, glass, sculpture, crafts, paintings and all the rest of it, drew up some rigid rules. Glass was verboten, frames likewise. Photographs were limited to a few specific sizes and proportions, edged in black with passe-partout tape. Grouping thereafter was brought within the range of possibilities without the succession of headaches that had beset previous hanging committees.

The rules still hold, but they are not enforced with sufficient rigidity. Someone is always sending in a maverick in ignorance of, or disregard of, the rules. Hanging committees face the necessity of throwing out a good subject or blinking at its failure to conform. This year's committee has had to do a great deal of blinking—and I'm afraid the Show is none the better for it. This is perhaps an opportune moment to pass out a hint to exhibitors, namely, that the material which conforms strictly to the rules is likely to go "on the line," crowding to sky or floor the items that are not properly dressed for the occasion. *Verb. sap.*

Wednesday, April 21.—The cherry tree made itself felt again today in our national history. Having launched George Washington upon his legendary march along the path of truth, it now turns its influence upon the memory of Thomas Jefferson. Three thousand delegates to the 46th D. A. R. Convention say that the proposed site for John Russell Pope's Jefferson Memorial will never do, for the cherry trees given us by Japan must not be disturbed.

And the ladies were even more emphatic in their protest against spending four million dollars in altering the east front of the Capitol. They "deem it a sacrilege to do away with this valuable antique of early American architecture" for which George Washington laid the cornerstone.

Thursday, April 22.—I'm not at all sure that the heading of this department might not more properly be set as "The Education of An Editor." Some weeks ago I wrote down the observation that Griffith Bailey Coale, in painting his great murals, never paints over another color and keeps his pigments thin. This afternoon I went down to his Eleventh Street studio, which, by the way, was formerly Daniel Chester French's workshop, and in its towering height spans three full stories of the old house on its street front. "Safe Harbor," the three-panel mural for the Dry Dock Savings Bank's new home on Lexington Avenue at Fifty-ninth Street—Cross & Cross, architects—was ready for hanging. And the pigment is anything but thin. Coale does put his final color directly on the canvas, but he isn't at all niggardly about it. I hope I shall not be classed with the commentator who tells, of an architectural masterpiece, first, the number of tons of steel therein, and the length of the elevator shafts "if laid end to end," but the fact is that Coale has laid on about four hundred pounds of lead-and-oil paint in showing the old square-rigger slipping in to her quiet anchorage under the threat of a following storm. And so proceeds the education of an architect who has only that dangerously small endowment of knowledge concerning the sister art of painting.

Saturday, April 24.—There has been a shower of words for and against subsidy in low-income housing. Charles Yale Harrison puts the various arguments into an orderly array in "What Price Subsidy!", a little pamphlet published by the New York City Housing Authority. It is particularly interesting in distinguishing clearly between capital subsidy, the deficit subsidy, and the interest subsidy.

Friday, April 30.—I am sorry to have missed the exhibition of American arts and crafts in Chicago, staged by the Index of American Design of the W. P. A. Federal Art Project. Here, in water colors, drawings, and photographs were recreated the everyday arts of a people: wooden figureheads, weathervanes, cigar store Indians, coach models, toys, furniture, costumes, silver, glass, pewter, textiles, ironware. Holger Cahill thinks that most of us Americans have had something of an inferiority complex about our own arts. This collection presents evidence that we have many results of a national art expression of which we may be proud.

DEVELOPMENT OF THE THEME TOWER

NEW YORK WORLD'S FAIR 1939

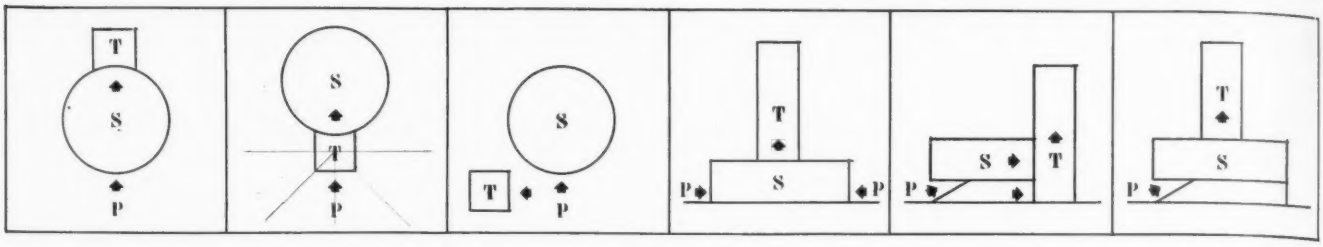
W. K. HARRISON AND J. A. FOUILHOUX, ARCHITECTS

The design procedure for the Theme Tower was as unusual as the results it produced. The following pages record the various steps in the solution to this problem.

AFTER A STUDY of the relationships between the various elements of the building the architects went to such source references as are represented by the Church of St. Marks and the cathedral of Padua. These were studied merely as compositions; vertical and horizontal masses in relation to open areas. Research of this type was carried up to and through the abstract, cubist, and constructivist schools of thought, taking in the work of such men as Gabo, Pevsner, Maholy-Nagy, Balachin, and Tatlin. These proved of great inspirational value as may be seen from the accepted design.

PLAN RELATIONSHIP OF (P) PLAZA, (S) SHOW, AND (T) TOWER

SECTION RELATIONSHIP OF PLAZA, SHOW, AND TOWER



Climax sequence of mass.

Tower at focus of axis.

Free relationship—selected scheme.

Show at grade—tower elevated.

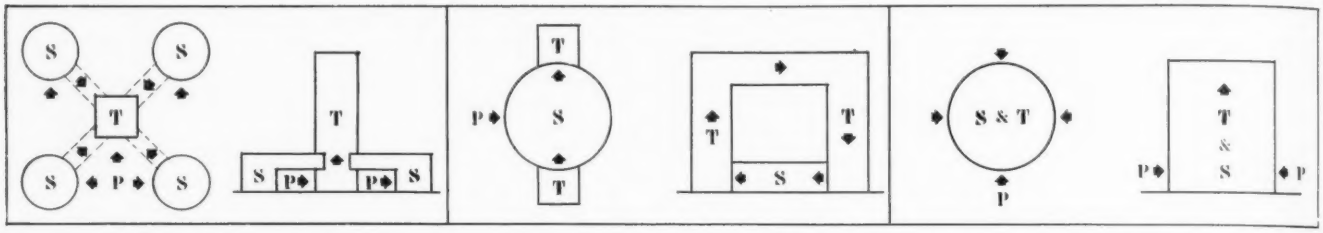
Tower at grade—show elevated.

Both tower and show elevated.

SHOW DIVIDED

TOWER DIVIDED

SHOW AND TOWER COMBINED



PLAN SECTION

Independent entrances to all parts—connected above—diffusion of interest.

PLAN SECTION

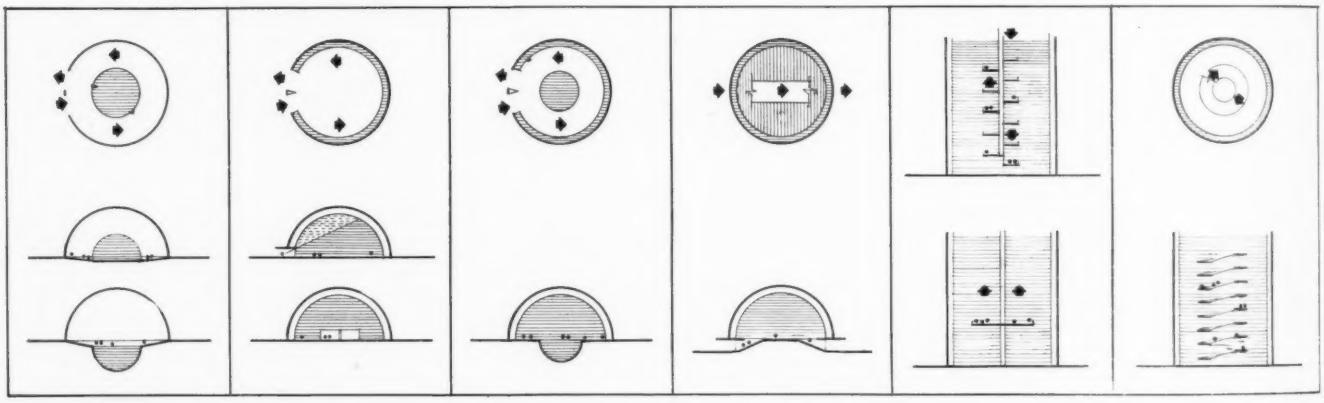
Continuous circulation through show and towers by moving belts or cars.

PLAN SECTION

Equal interest from all sides—continuity of circulation—no definition of units.

RELATIONSHIP OF PEOPLE TO SHOW

VARIATIONS IN CIRCULATION



People around exhibit—rotary circulation—led to moving belts.

Exhibit around people—dead space and interruption of doors.

Combination—public as part of show—lower exhibit expanded.

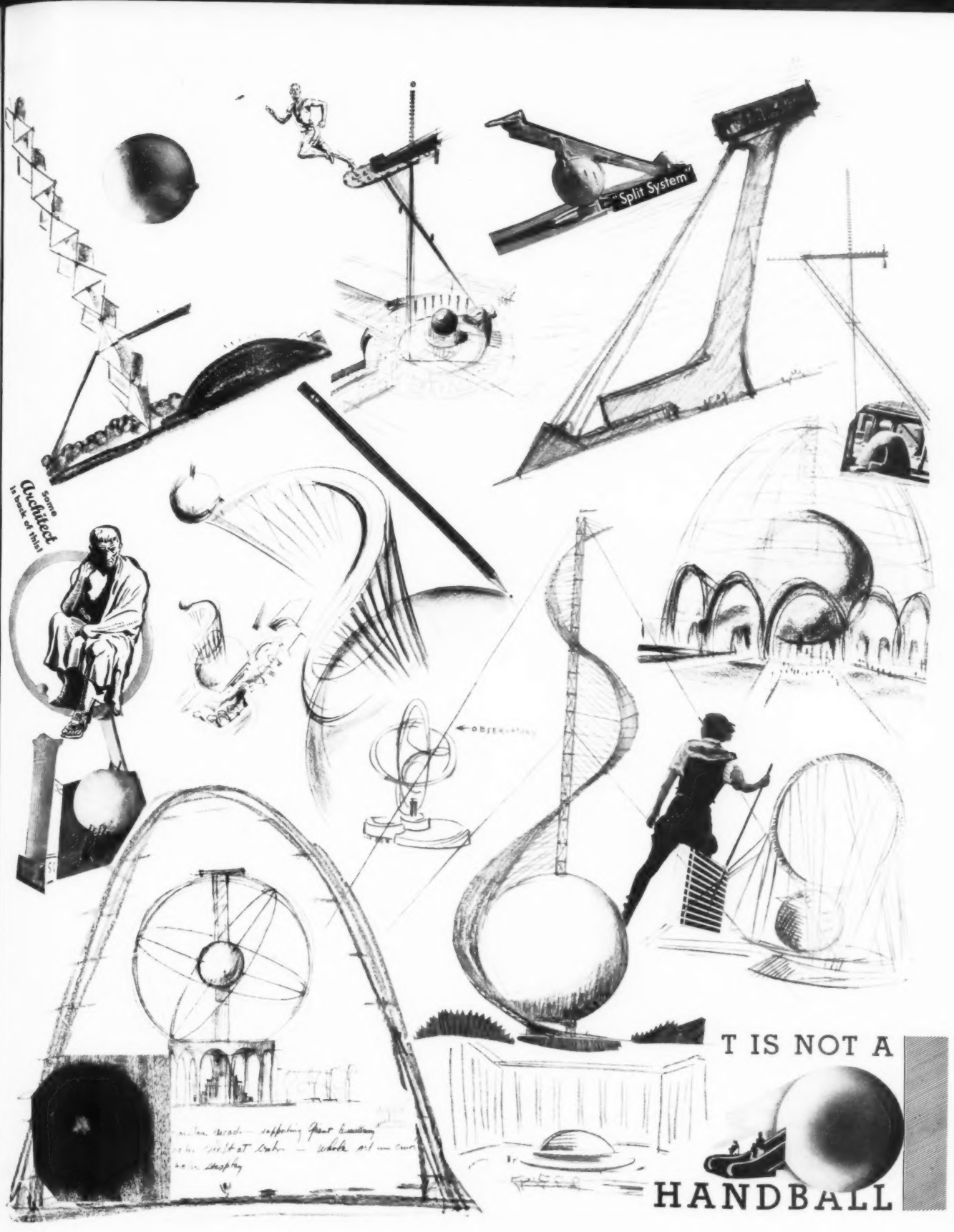
Circulation in straight line. Entrance from below for dramatic sense of space.

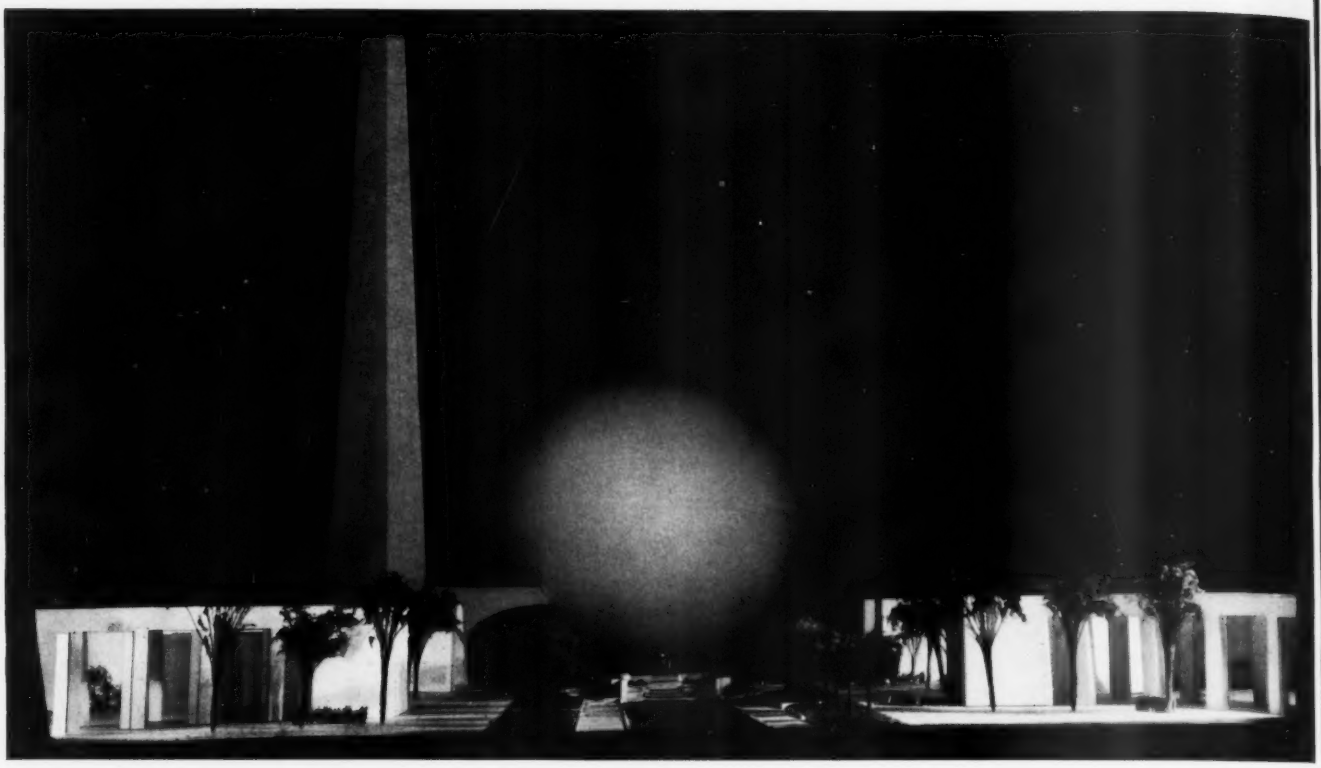
Moving chain of cars—rising platform lifted by a balloon.

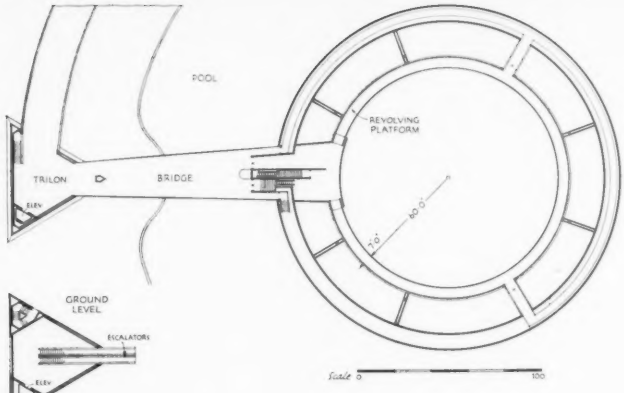
Spiral ramps—many possible variations were considered.

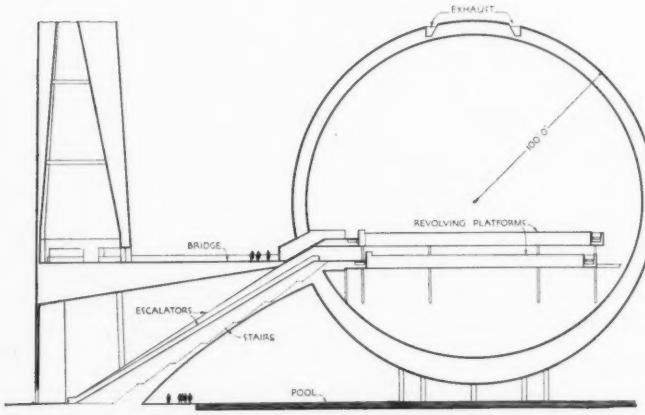
THE FIRST STEP in the development of the Theme Tower was the study of relationships between the various elements of the building in both plan and section, between the observers and the building, and the resulting variations in circulation. These relationships once decided upon merely established an hypothesis, and opened the way to further study. The collage on the opposite page, a composition by Werner Drewes, is typical of the many schemes considered before arriving at the final design.

THEME TOWER, NEW YORK WORLD'S FAIR
HARRISON AND FOUILHOUX, ARCHITECTS


"Split System"
Some Architect is back of this!
T IS NOT A
HANDBALL



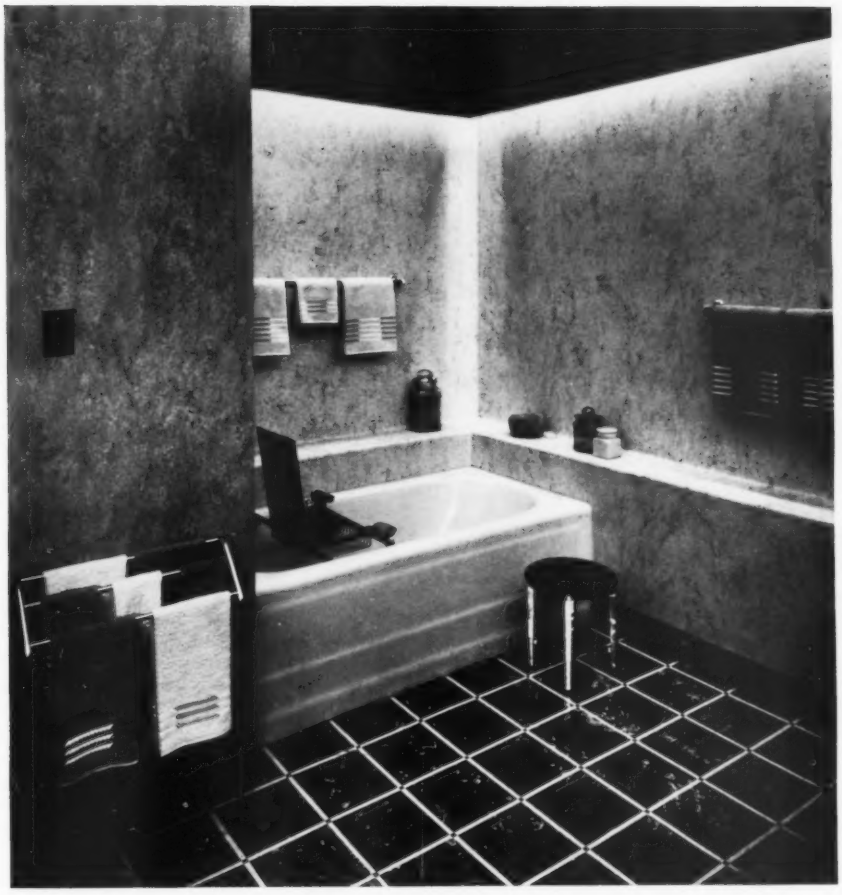




TO DESCRIBE THE STRUCTURE properly, two new words were coined. "Trilon," a combination of "tri" and "pylon" was applied to the obelisk, and "Perisphere," implying "about, all around," was attached to the spherical theme exhibit. The final accepted design consists of the Perisphere, 200 ft. in diameter, and free standing Trilon, 700 ft. high. The Perisphere rests on columns rising from a shallow reflecting pool. The base of the Trilon gives access to escalators which convey observers to the two revolving platforms within the Perishphere. An elevator and stairway afford vertical circulation to an upper level from which there is a connecting bridge also giving access to the platforms. A ramp leads from this level to the ground, running approximately three-quarters of the way around the Perisphere and affording a view of the complete fair.

THEME TOWER, N. Y. WORLD'S FAIR
HARRISON AND FOUILHOUX, ARCHITECTS

Subjects already presented include closets, stairs, kitchens and classrooms. In future issues hospital rooms and wards, apartments, and public toilets will be discussed.



UNIT PLANNING • V
BATHROOMS

Text and illustrations by GERALD K. GEERLINGS

THERE exists a vast amount of detail surrounding elements that, in combination, make a bathroom. Codes and plumbing practices, fixtures and fittings, minimum and maximum dimensions, old materials and new—all are involved in the development of a space requiring the most precise workmanship of any room in the house.

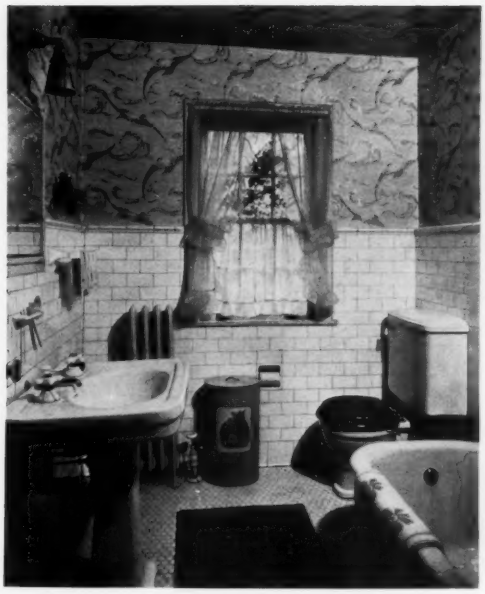
Common to all bathrooms, however, are two main factors—a clearly defined series of functions and requirements of space and equipment to fulfill them. Obviously these vary in degree according to the desires of an owner or the physical and economic limitations involved. But as a constantly recurring planning problem, residential bathrooms are subject to standardization as to type and, to a certain degree, to size and shape.

It is therefore practical to regard bathrooms as planning units falling into the following three main headings.

1. The Private Bathroom—A space normally containing a lavatory, water closet and tub, with or without shower head. It is primarily for the use of a single individual and can be as small as necessary clearances for particular types of fixtures allow.

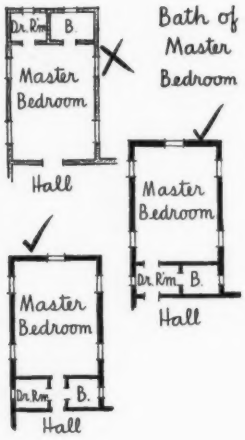
2. The Utility Bathroom—This may contain only the three usual fixtures but is designed for use by more than one person. In size and fixture arrangement it provides working area above the minimum between fixtures for ministering to sick needs, etc.

• BATHROOMS
UNIT PLANNING
NUMBER.....5



Fixtures are generally satisfactorily located. Restudy might have placed lavatory nearer window.

Wall finish is here used to face the recessed tub. Note the useful shelf space on all sides of recess.



3. Bathroom Serving Adjoining Bedrooms—An arrangement normally for use by more than one person that may contain a shower and lavatory in addition to the three usual fixtures. Space allotments are close to the practical minimum, but fixture arrangements may vary widely to serve a range of planning conditions.

Obviously each of these three is subject to variance in size, arrangement and equipment. However, the most common fixture types and arrangements have been presented in the accompanying TIME-SAVER STANDARDS as a series of standard planning units of minimum size.

In addition to bathroom types, the TIME-SAVER STANDARDS include a series of Toilet Lavatory units. These indicate a variation of practical fixture arrangement and establish minimum areas for such planning units.

Beyond these unit plans, standardization appears impractical in the present development of residential bathrooms. Items of equipment and accessories are in all cases subject to individual choice and may involve problems of installation and use equally as important as that of planning. The following paragraphs discuss the more significant of these details as they may apply to the development of the planning units.

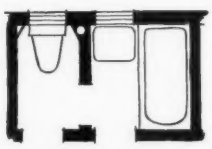
I. GENERAL LOCATIONS OF TOILET AND BATHROOM FACILITIES

(A) Minimum provisions for minimum house (one 3-fixture bathroom only).

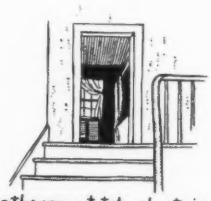
Where all rooms are on one floor, the bathroom will be most economical when backed up against the kitchen. For a two-floor house the bathroom should be directly over the kitchen. In a small house every foot of piping and installation labor must be considered in its ratio to the cost of the entire house. Where fixtures are limited to one lavatory, one water closet and one tub, the closet should preferably be in a separate compartment adjoining the other two fixtures, as shown in the accompanying diagrams and T-S.S. Serial No. 79.

(B) Single second-floor bathroom (in addition to lavatory and toilet on first floor or basement).

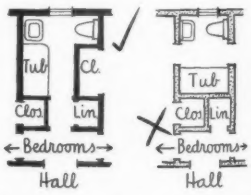
Location should be such that from the entrance hall one is not able to look into it. If conditions fix a location at the top of the stairs, then, at least, fixtures and doorswing should be managed so that water closet and lavatory are not seen. A conveniently central location is desirable, with a single door leading to the hall. Where there is a single bathroom to serve the whole



Water Closet in separate compartment



Bathroom at top of stairs



Bathroom between bedrooms

Modern materials intelligently used aid in solving many problems. At right, glass blocks provide adequate natural light yet maintain privacy. At left, large mirror and convenient shelves, plus proper lighting, make the lavatory useful also as a dressing table.

house, it is preferable to place the water closet and one lavatory in a separate enclosure with a tub and another lavatory in an adjoining compartment.

(C) More than one bathroom on the bedroom floor.

At least one should be near the stairs and accessible from the hall without going through a bedroom. If possible, bathrooms should not have more than one door, even when between bedrooms. The disadvantages of being "locked out" of a bathroom because some one has forgotten to unlatch bedroom doors are all too obvious. Accompanying sketches show preferable and undesirable plans.

When a bathroom serves one master bedroom, it is better placed between hall and bedroom, than at the far end of the bedroom. At the far end it cannot be entered from the hall without traversing the entire length of the bedroom, thus making a semi-corridor out of the bedroom and limiting the possibilities of furniture arrangement. Also, this location frequently reduces the exterior wall exposures from two to one, or from three to two. Preferable locations give access through the dressing room or from a passage dividing dressing room from bathroom.

(D) Three-fixture bathroom on first floor (in addition to second floor bathroom).

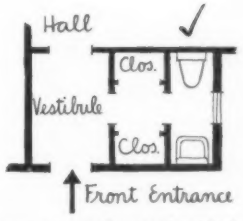
To be of maximum efficiency, a first floor bathroom should be off a room which can be used as a library, an occasional guest room or, if near the front door, as a convenient sick-room when necessary. Such a bathroom would include the function of a first floor lavatory or "powder room."

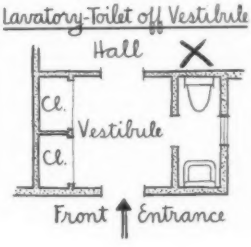
(E) A single, first-floor servant's bath.

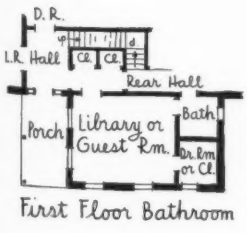
When access to a servant's bathroom is from the kitchen and through servant's room, as indicated in the sketch, use of the bathroom is limited to a single servant. Since extra servants are frequently brought in for special occasions, servant's room and bath should be planned so that both may be entered independently from a hall which also serves rear entrance and kitchen.

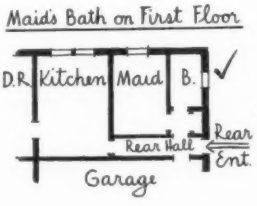
(F) Two-fixture lavatory-toilet near front entrance.

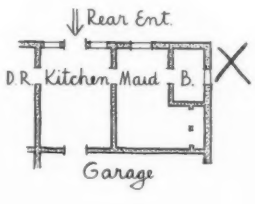
In the medium-sized house this is considered a necessary auxiliary to the coat closet. When planned in combination, access to the lavatory-toilet room should be *through* the coat closet and not directly from entrance hall or vestibule. Privacy will obviously be greater and the sound of running water lessened, if planned as shown in the solid sketch.

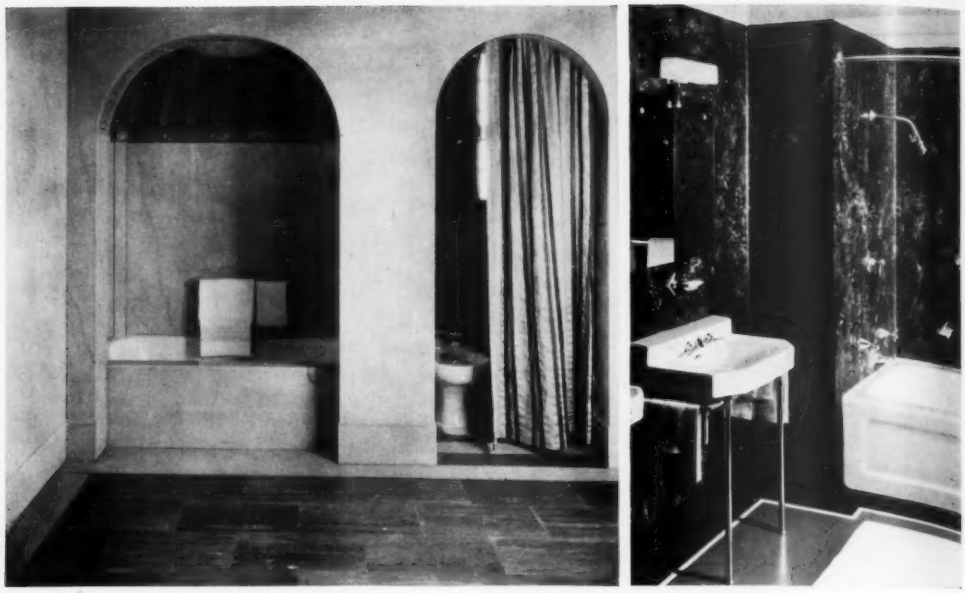












Two examples well though out for convenience and privacy. At left individual compartments for tube and water-closet. Note window providing both ventilation and light for latter. At right, lavatory with integral towel bars is particularly useful when free wall space is not available.

II. LOCATION OF VARIOUS ELEMENTS OF TOILETS AND BATHROOMS

(A) Plumbing lines.

The 3″ stack ordinarily used in a residence cannot be housed in a 4″ stud partition without an offset, but can often be conveniently installed in the corner of the room and easily concealed by a furred wall at 45°, as shown in the sketch. Such an arrangement is particularly advantageous when new lines must be added in remodeling work.

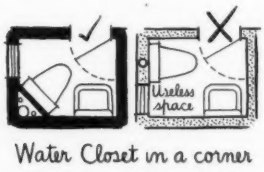
When 6″ studs are used behind the water closet to accommodate the stack and 4″ studs elsewhere, either a 2″ offset results in the bathroom or a 1″ offset develops in both bathroom and the adjoining area. The resulting corners in the wall break are difficult to surface with practically any material except plaster. This should be borne in mind when working drawings are being made. Often it is better to sacrifice the 2″ gained through the use of 4″ studs, and use deeper ones throughout the wall which houses the stack.

The stack should be located as near the closet as possible, well wrapped with hair-felt, rock wool or some similar product to reduce sound transmission. A cleanout should be in an accessible location, a detail frequently overlooked, particularly in houses which do not have basements.

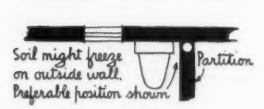
(B) Water closet.

When all three fixtures are on the same wall, installation costs are held to a minimum. In such a case the lavatory is well located between tub and water closet. So placed, if a medicine closet is placed over it with lights on each side, the room is equally illuminated from side to side. More important is the fact that the person using the lavatory has elbow room on both sides. Ideally the water closet is placed so that it is screened when the door is left open.

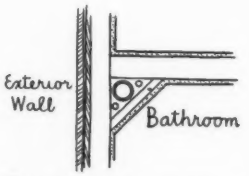
In medium-sized lavatory-toilets and sometimes in irregular-shaped three-fixture bathrooms (as under cut-off eaves), it may be advantageous to place the water closet in a corner at 45°, particularly in a remodeling job where a new stack must



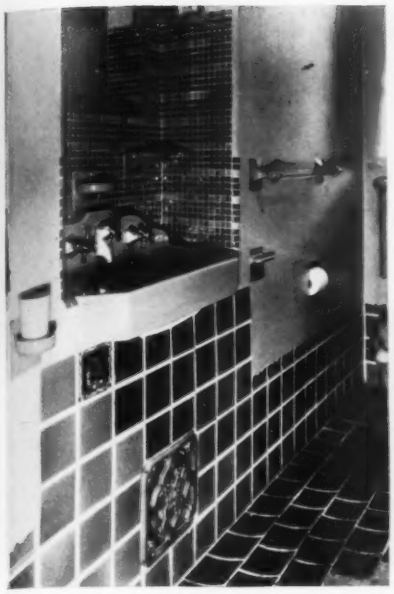
Water Closet in a corner



Water Closet on an outside wall



Plumbing lines in corner



At left, closets in adjoining rooms may be planned to permit use of a recessed, decoratively treated lavatory, thus increasing apparent floor space in bathroom. At right, the need for two lavatories, particularly in baths serving master bedrooms, is often apparent at the "morning rush hour".

be run exposed. In a bathroom of medium size a door cannot swing inward without interfering with one of the fixtures, unless the water closet is placed at an angle. In such cases the 45° wall should be built up solidly at least to the top of the tank. Corner shelves above can be both useful and decorative.

While the practice of placing the water closet against an outside wall is not recommended, sometimes this cannot be avoided. When this is necessary, the stack is best located in an adjoining partition. If it must be in an outside wall, the stack should always be thoroughly insulated with hair felt, rock wool or some other equally effective material.

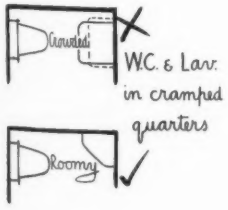
In the accompanying TIME-SAVER STANDARDS the clearance in front of the water closet is given as 1′-6″. This irreducible minimum should be increased whenever possible.

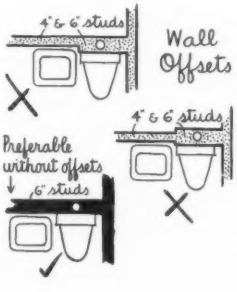
(C) Lavatory.

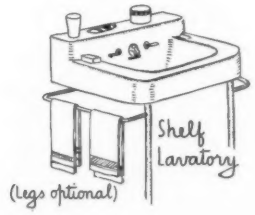
In many lavatory-toilets of minimum dimensions, as well as in some three-fixture bathrooms, the lavatory may be directly opposite the water closet and on the same axis. An absolute minimum distance between them is 1′-6″. This distance should be increased if possible and if not available, some other location sought. Sometimes a very shallow lavatory of 15″ depth may be used to advantage. In other cases it will be found possible to use a corner-type lavatory.

The "shelf-back" type of lavatory is often most advantageous because of the useful ledge space on which to place articles, thus saving on accessories where wall space is at a premium. It can be supplied with legs and towel bars and thus can help solve the towel bar problem in cramped quarters.

Where a certain extent of continuous wall space exists, a lavatory (or other fixture) should not be centered without due consideration, because so locating it might render the adjacent wall space valueless. A dressing table should not be placed too near a lavatory, because the splashing of water may cause damage.



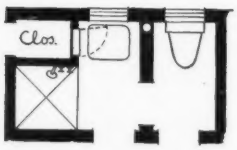




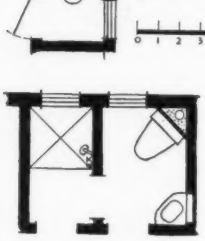
XUM

• BATHROOMS
UNIT PLANNING
NUMBER.....5

Use of square bath with diagonal tub may assist in solving unusual problems. Very useful are the seats provided both in this type and others, some at front and some at end of tubs



Three-fixture bathrooms divided into two compartments



(D) The tub.

Because the tub is the largest of the three bathroom fixtures, its position usually influences not only the location of the other two, but the window and door as well. A modern type of pop-up drain makes it no longer necessary to provide an access panel from an adjoining room for repairs or replacements. A tub installation involves location of a shower-head. When a lavatory is adjacent to a tub, as shown in the sketch, a shower head should not be at the lavatory end because of several obvious difficulties—unless the tub is recessed by a wall next to the lavatory. New types of tubs with integral seats are well worth consideration as corner or recessed installations.

(E) Shower stall.

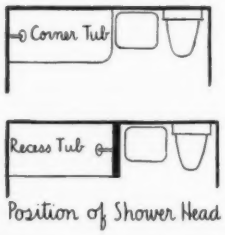
A shower stall can be either a principal fixture in the very small bathroom not large enough to accommodate a tub, or an auxiliary one in a large bathroom which already contains a tub. It does not always have to conform to any specific size, for a wide range of sizes are available as stock in pre-fabricated types and built-up stalls can be of any dimension beyond the minimum that the designer wishes.

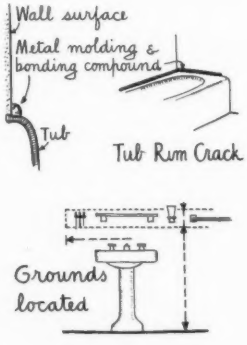
It is advisable to locate the shower stall as far as possible from the bathroom door. Water accidentally spattered on the bathroom floor creates an unexpected and slippery hazard to those entering from the hall. Valves and shower head should be near the stall door so they can be operated easily from both outside and inside the shower compartment. A mixing valve is well worth what it costs.

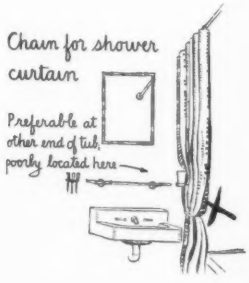
When a three-fixture bathroom is required but there is not sufficient room for a tub, a shower stall can generally be substituted without much fear of its acceptance. It may often be an advantage to place shower and lavatory in the same room, with the water closet in an adjoining but separate compartment, as shown in the sketches. Another practical arrangement locates the shower stall in its own compartment, accessible from a hall with lavatory and water closet in an adjoining room. A shower stall may be 2′-6″ x 3′-0″ but a more advisable minimum is 3′-0″ square.

(F) Accessories.

This subject has been fully treated in TIME-SAVER STANDARDS Sheet C8.2.2. In planning the bathroom it is important that working drawings show all accessories in fixed locations Otherwise pipe interference on the job may be







disconcerting. Usually omitted as a detail of working drawings is the definite location of grounds (unless the accessories are of the tiled-in type). When accessory escutcheons must be screwed in after plaster walls are completed, it is nearly impossible to ascertain exactly where a screw will hold properly. A grab bar can prove dangerous if screwed into plaster instead of into a wood ground. Grounds should be shown dotted and dimensioned on scale details and later checked in supervision.

Where a lavatory is adjacent to a tub having a shower, the hook for tying back a shower curtain should be at the end of the tub opposite the lavatory to avoid interference of shower curtain with lavatory accessories.

Avoid placing towel bars over the side of a tub having a shower. It is better to specify a lavatory with legs and towel bars.

(G) Windows and doors.

The best window location is at right angles to a lavatory, on either side of one or in clear wall space. Often it is difficult to avoid locating a window over a fixture in the small bathroom or toilet-lavatory. Frequently when a window over a fixture is unavoidable, the best place is a high location above the water closet. Next best would be over the lavatory, providing the medicine cabinet can be conveniently placed. This should be installed so that the door will open easily and without interference. In custom jobs the door may be fitted with a mirror on the *inside* and opened for shaving, etc. Otherwise an adjustable mirror on an extension bracket should be installed.

The least desirable window position is over the side of a tub because of water splashing on the sash or sill. If a window is absolutely necessary there, jambs should be tiled or plastered, the sill tiled and a water-resistant curtain installed on an overhead rod. It is now possible to obtain window curtains of the same material as shower curtains; and it is possible to curtain the window-over-tub in a practical and attractive manner. Glass bricks in a large panel over the tub can admit all the necessary light and a small hinged window can be installed with them, high enough to be above shower spattering, yet low enough to be easily reached.

The ideal location and swing of a bathroom door should shield or conceal the closet. However, cramped space in the small bathroom often makes it impractical for the door to swing in at all. Contrary to the accepted practice of swinging a door into the bathroom, there is no good reason why it should not swing out, provided plenty of clearance exists in a hall.

The ordinary bathroom door need not be more than 2′-0″ wide because there is no furniture to move in or out. In a luxury bathroom containing furniture, the door should be 2′-6″ wide. It is advantageous to use a 5″ casing for the door in a corner location to allow installation of towel bars behind the door.

Radiators should be checked for projection from the wall, because in certain locations they may prevent a door from remaining wide open. Ideally an adjacent radiator should be recessed if the door is to open 90°.

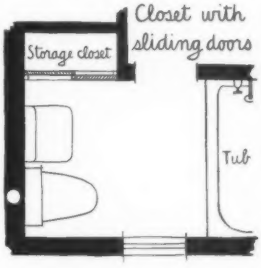
Swinging doors to bathroom cabinets or closets may interfere with fixtures on the main door. This can be overcome by using sliding doors. The added cost for proper hardware will be insignificant in comparison to the floor space saved.

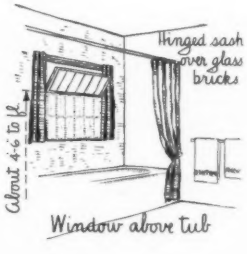
UNIT PLANS AND DATA

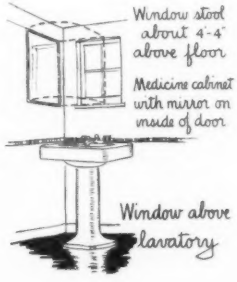
In the following TIME-SAVER STANDARDS, typical bathroom plans and details are developed in relation to space-planning and fixture layout. Plans may be traced directly if the architect so desires. It should be borne in mind that clearances and dimensions shown, being an irreducible minimum, should be reasonably increased where possible; and that since fixtures are drawn at an average minimum size, exact dimensions of fixtures used should be ascertained before making final layouts.

Complete information on the many types of bathroom accessories, and locations for each, is given in TIME-SAVER STANDARD C8.2.2, "Bathroom Planning—Accessories," and on sizes of all types of fixtures in TIME-SAVER STANDARD C8.2.1 "Bathroom Planning-Fixtures," both of which were published in September, 1935.

Plans illustrated include: (1) Three-fixture baths such as are essential for minimum provision or for single second-floor bathrooms, containing tubs with or without showers, lavatories and water-closets; (2) Three-fixture baths with shower stalls, omitting the tub, for use as auxiliary baths; (3) Utility Baths; (4) Lavatory-toilets, and "powder rooms"; (5) More comfortable baths containing separate compartments for tubs or water-closets, or in combination with dressing rooms.







AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 79
MAY, 1937

BATHROOMS—Three-fixture PLANS

Details on this sheet will serve as a guide in the development of convenient, well-equipped residential bathrooms of any type or size. Plans represent a series of minimum areas which provide adequate clearances for use of three major fixtures. For minimum plans of two-fixture lavatory-toilet rooms, separate compartment bathrooms and plan suggestions for combining dressing rooms and bathrooms see T-S.S. Serial No. 80 (May 1937). For data on bathroom accessories see T-S.S. C8.2.2 (September 1935).

PLANNING

Bathrooms containing usual types of three major fixtures—tub (or shower), lavatory and toilet—fall into three groups:

1. The Private Bathroom is primarily for use of a single individual. It may occupy only 25 sq. ft. of floor space with a minimum-sized stall shower in place of a tub. Space with a tub averages about 30 sq. ft. (See Nos. 1, 4, 5, 9, 10 and 12).

2. The Utility Bathroom provides area above minimum fixture clearance for administering to sick needs, etc. Minimum floor space ranges from 45 to 60 sq. ft. depending upon type and arrangement of fixtures. See plans Nos. 2, 3, 6, 7 and 8; also Nos. 9 to 13 inclusive on T-S.S. Serial No. 80 (May 1937).

3. Bathroom Serving Adjoining Bedrooms is normally for the use of more than one individual. Required floor space ranges from 40 to 50 sq. ft. This may include an extra lavatory in a separate compartment with the toilet. See plans Nos. 6 to 9 inclusive on T-S.S. Serial No. 80 (May 1937).

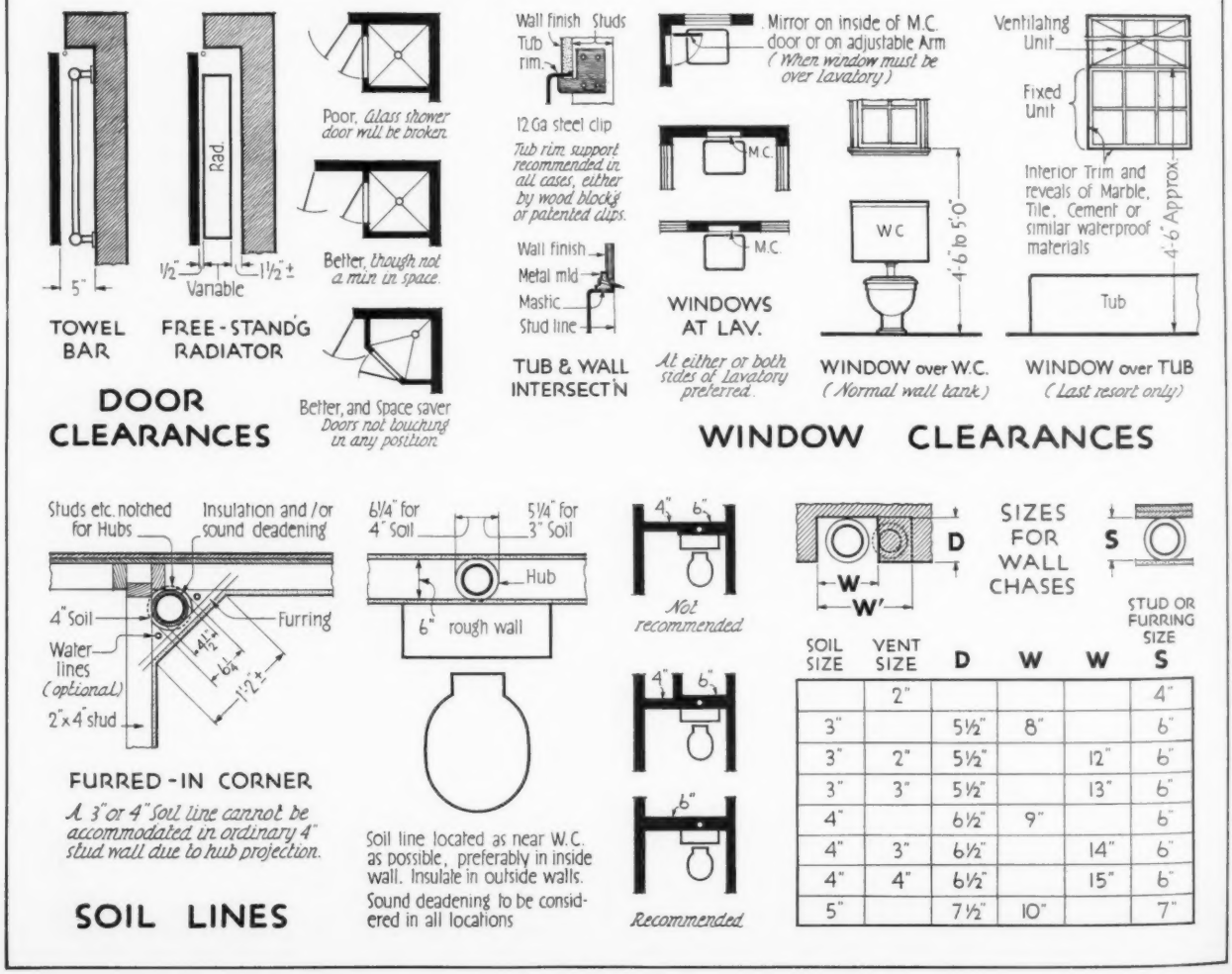
Two-fixture Lavatory-Toilets occupy about 14 sq. ft. at a minimum and about 22 to 25 sq. ft. when a dressing table is included. See plans Nos. 1 to 5 on T-S.S. Serial No. 80 (May 1937).

Accompanying plans drawn at ¼'' scale include these commonly encountered minimum arrangements. They may easily be adapted to meet varying requirements; but in all cases the minimum clearances indicated for fixtures should be observed. These refer to commonly specified fixture types and sizes. For clearances of other types and sizes, see T-S.S. C8.2.1 (September 1935). Adjustment in size and arrangement may be advantageous if tubs as shown are replaced by shower stalls or by square tubs for full or corner recesses.

DOORS AND WINDOWS

Doors to private baths, baths serving adjoining rooms, and to lavatory-toilet rooms can be 2′ 0′′ in width but for utility bathroom, doors should be 2′ 4′′ wide to permit passage of furniture as required. Preferably, bathrooms should contain only one door. Customarily, doors swing into the bathroom. If hall areas are sufficiently large, doors to small bathrooms can be advantageously swung out. In-swinging doors should be set to allow space for towel-bars or radiators as shown below.

Windows must be large enough to meet local code requirements. Location depends largely upon fixture arrangement and location of accessories. When placed over a fixture, minimum sill heights should be as indicated below. Windows over tubs are not recommended.

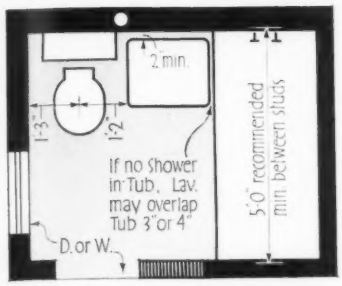


SOIL SIZE	VENT SIZE	D	W	W	S
	2"				4"
3"		5½"	8"		6"
3"	2"	5½"		12"	6"
3"	3"	5½"		13"	6"
4"		6½"	9"		6"
4"	3"	6½"		14"	6"
4"	4"	6½"		15"	6"
5"		7½"	10"		7"

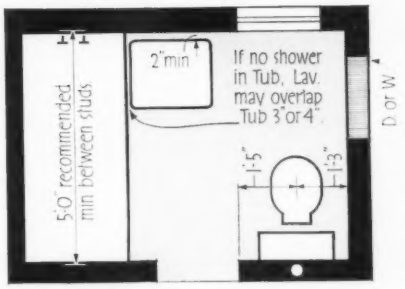
AMERICAN ARCHITECT
TIME-SAVER STANDARDS

BATHROOMS—Three-fixture PLANS

Serial No. 79
MAY, 1937



1 Opening location variable



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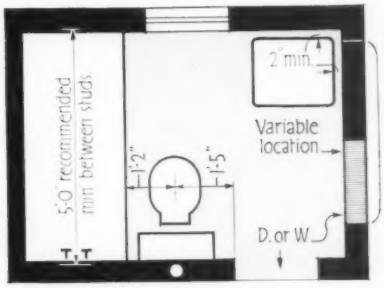

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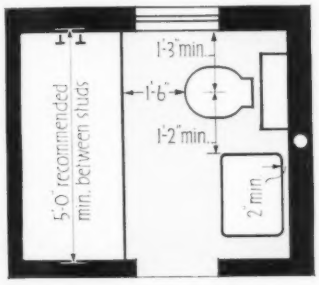

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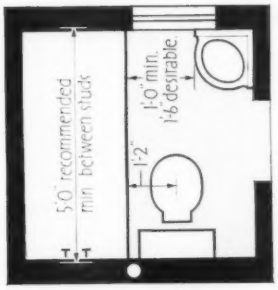

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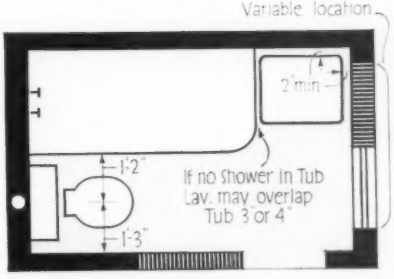
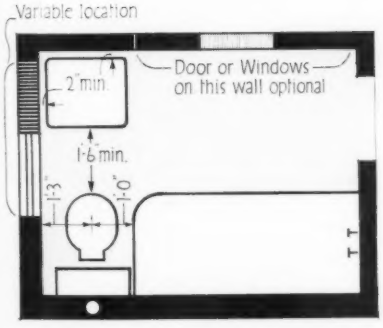


6 Door location variable

Scale 0 5



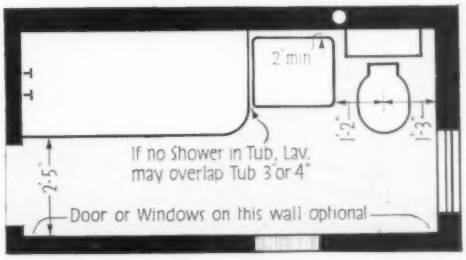
7 *All plans at 1/4" equals 1'-0"*

THREE FIXTURE BATHS With Tub

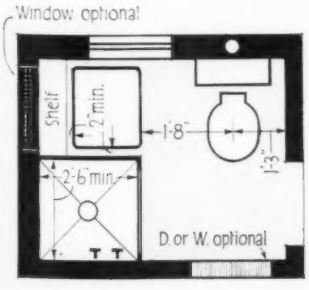
(Shower over Tub if desired)

TUBS *(Length between studs)*
Minimum ... 5'-0"
Desirable ... 5'-6" to 5'-8"

ACCESSORIES *and* **GROUNDS**
See T-5.5 C8.2.2



8 **SHOWERS** *(Receptor pans between studs)*
Absolute min 2'-6" x 2'-8" Desirable 3'-0" x 3'-0"
Long min 2'-6" x 3'-0" or 2'-6" x 3'-6"



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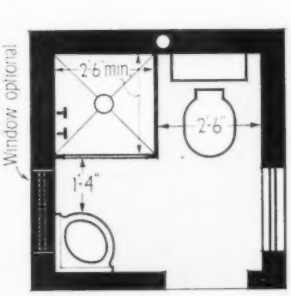

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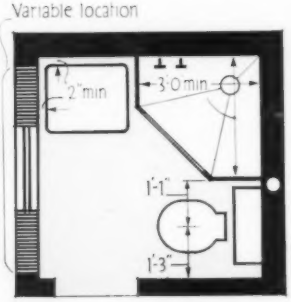

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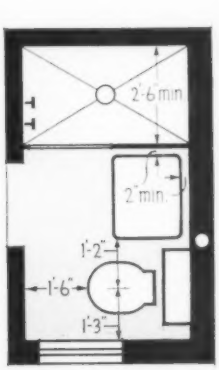

12

THREE-FIXTURE BATH ROOMS . . . .With Shower

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AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 80

MAY, 1937

BATHROOMS—Lavatory & Dressing Room PLANS

On this T-S.S. are minimum plans for a number of two-fixture Lavatory-Toilet Rooms, and plan suggestions for bathrooms in which one or more fixtures are contained in a separate compartment. The reverse page contains suggested layouts for bathrooms planned in combination with dressing rooms. For plans of minimum three-fixture bathrooms and details applicable to development of all types of bathrooms see T-S.S. Serial No. 79, May 1937. For data on fixture sizes and accessories, see T-S.S. C8.2.1 and C8.2.2 respectively.

LAVATORIES

Two-fixture lavatories for living portions of residences may vary in size and appointments from the bare minimum to luxurious "powder" rooms. However, economical use of space generally demands that lavatories be restricted to minimum clearances. In the plans given below, alternate positions for doors and windows are shown. For data on soil lines, etc., see T-S.S. Serial No. 79 (May 1937).

BATH AND DRESSING ROOMS

To avoid the excessive humidity common in the usual three-fixture bath, tubs or showers may be located in separate compartments, with or without an additional lavatory. This type of plan also affords greater privacy for use of water-closets. Separate doors, possibly with a small entry, are desirable. Connecting doors between compartments are also possible but are not recommended as the only means of access.

In another type of bath, the water-closet is in a separate compartment, affording complete privacy. In even the minimum-sized bath of this type there is generally room for an additional lavatory or dental basin, and the bath proper is often enlarged into a combination dressing-bath room. Dressing tables may be a combination of lavatory and table or individual fixtures. In the latter case, tables should be sufficiently far from lavatories to prevent damage from splashing water.

A still greater expansion of this type provides a separate dressing room and connecting bath, with compartment for water-closet.

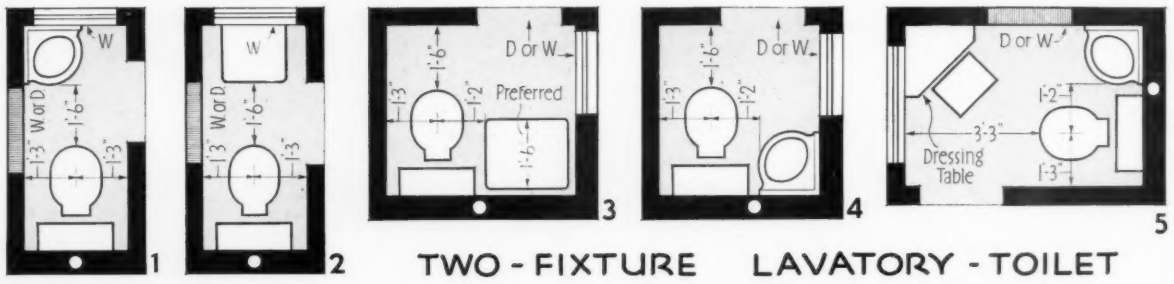
In all these more luxurious plans for baths, showers should be included, either as stalls or over tubs. Dimensions given in the drawings are clearance minima only and should be increased wherever possible. Dimensions not given are either matters of taste or depend upon other plan factors such as fixture sizes, door placement, circulation, etc. Door and window locations are discussed on T-S.S. Serial No. 79 (May, 1937).

FIXTURES AND ACCESSORIES

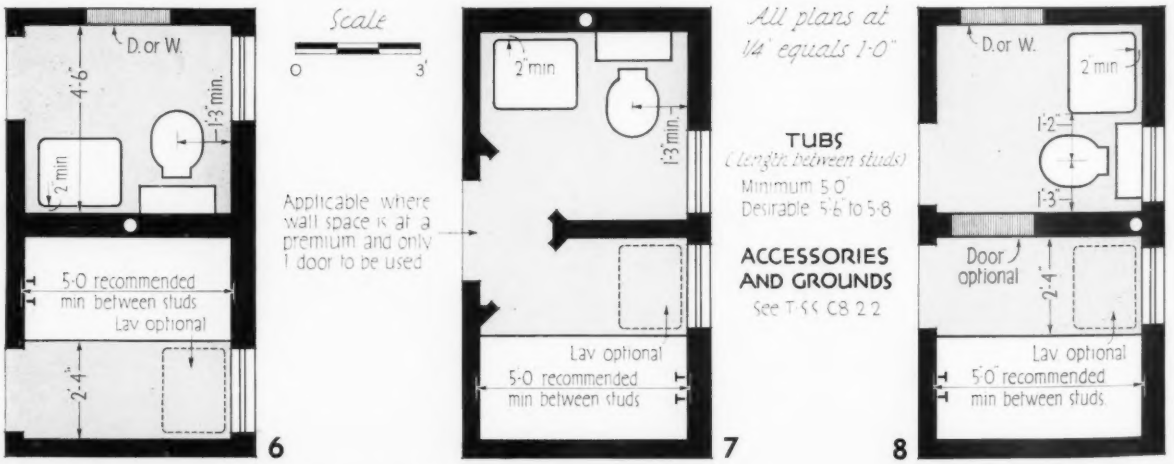
In addition to the usual fixtures and accessories indicated, all baths with more than minimum equipment should include provision for linen storage. This may consist of towel cabinets recessed in the thickness of furred walls, either over fixtures or as full height cabinets; or may be expanded into complete linen closets as shown in T-S.S. Serial Nos. 70 ("Basic Data—Closet Planning") and 72 ("Over-clothing and Utility Closets").

Dressing room baths may include completely fitted wardrobe as outlined in T-S.S. Serial No. 71 ("Bedroom and Dressing Room Closets").

Types of fixtures, soil and water supply lines, placement of windows and doors, and clearances are fully discussed or cross-indexed on T-S.S. Serial No. 79 (May 1937).



TWO - FIXTURE LAVATORY - TOILET

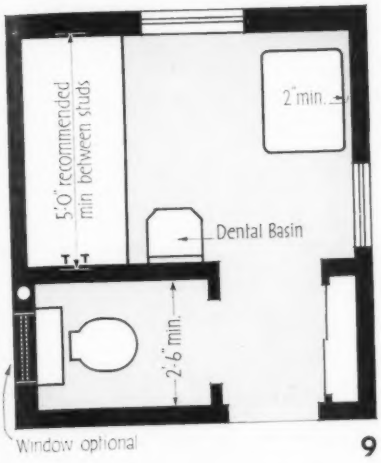


THREE - FIXTURE BATH ROOMS . . . . Tub in Separate Compartment

XUM

Serial No. 80
MAY, 1937

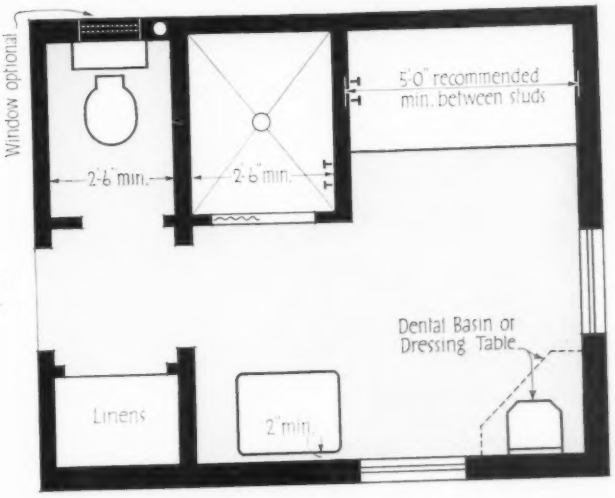
BATHROOMS—Lavatory & Dressing Room PLANS



9

Scale
0 3'

All plans at 1/4 equals 1'-0"



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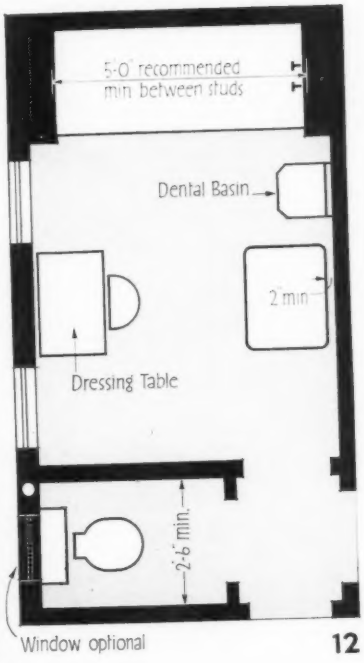
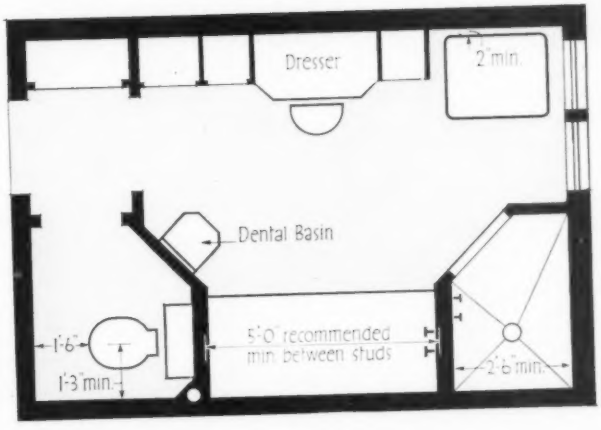


12

TUBS
(Length between studs)
Minimum 5'-0"
Desirable 5'-6" to 5'-8"

SHOWERS
(Receptor fits between studs)
Absolute Minimum 2'-6" x 2'-8"
Desirable 3'-0" x 3'-0"
Long Minimum 2'-6" x 3'-0" or 2'-6" x 3'-6"

ACCESSORIES AND GROUNDS
See T-55 C8 2.2

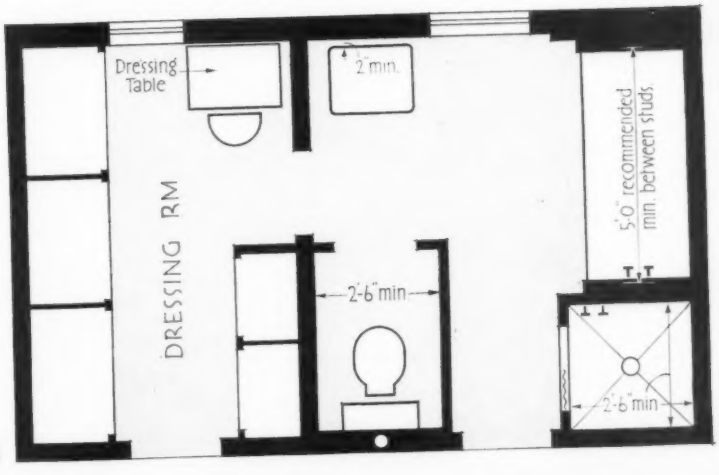


11

BATHS AND DRESSING ROOM

Baths with Three or more Fixtures

(Toilet in Separate Compartment)



13

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XUM

TECHNICAL DIGEST

KEY TO PRESENTATION

Typical reference:
15 N'36:14-26 **gptv**

This indicates: Issue of November 15, 1936, pages 14 to 26 inclusive, presented according to the following key:

d—detail drawing **g**—graph **p**—plan
s—section **t**—text **v**—photo view

Accordingly, **gptv** means graph(s), plan(s), text and photographic view(s) in the article mentioned.

ACOUSTICS

Sound-proof windows. (K. M. Constable). Architect & Building News. (London). 5 Mr'37: 293-294 **gpt**

National Physical Laboratory tests on sound transmission show that the sound insulating value of materials forming a tight partition is determined almost entirely by their weight per square foot. Thus a window of 21-oz. glass will transmit 200 times as much sound as a 4½-in. brick wall.

The influence of double-glazing depends on the spacing of the panes. If the spacing is not correctly proportioned the transmission of a double window may be greater than that of one of the component windows. A separation of about 4-in. (for 21-oz. glass) has been found to transmit low frequencies easily. Heavier glass can safely be spaced more closely.

It is also recommended that the interior of the double-glazed space (the window frame) be covered with sound absorbing material.

CONSTRUCTION

More Science for the Builder. (J. E. Burchard, Jr., from Journal of Applied Physics). Science Digest. My'37:5-8 **t**

Notes on advances in building science: Design of foundations by principles of soil mechanics, air conditioning, radiant heating, odor measurement, noise reduction, school illumination. Final paragraphs on application of such advances to prefabrication.

Science & Building Exhibition. Royal Institute of British Architects Journal. (London). 6 Mr'37:441-443 **t**

A review of a March exhibition representative of the work of all organizations performing research in building in England. These include the Building Research Station, National Physical Lab., Forest Products Research Lab., Geological Survey & Museum, Fuel Research Station, and various industrial research associations.

The exhibits included among other things displays of modern methods of concrete work, roofing material tests, properties of units of building, heating, insect damage to timber, illumination, acoustics, and wind pressure.

The inexpensive catalog is really more of a reference handbook on building research than a list of exhibits.

Repairing earthquake damage. (J. E. Byers). Engineering News-Record. 11 Mr'37:362-366 **tv**

This more technical article is preceded by a general one on safeguarding schools against earthquakes. A descriptive list of seven seismic resistance ratings of all existing schools in Los Angeles is included. The method of organizing and proceeding with rehabilitation work is covered carefully in the text, and five different schemes are outlined. There are six illustrations of typical earthquake damage (Southern California, 1933) and methods of reinforcement. Notes on the cost of this work conclude the report.

The Vierendeel Truss. (L. Baes). L'Ossature Métallique. (Brussels). Mr'37:125-152 **dgst**

Beautifully organized technical paper in French (the second on this subject). This one applies particularly to the bridge of Val Benoît at Liège. Of great interest to those who are not concerned with the calculations will be the excellent views of a photo-elastic model. When this small scale, transparent counterpart of the truss is illuminated with polarized light, it shows clearly by interference lines the stresses induced by the loads indicated.

A new method of concrete wall construction. The Builder. (London). 5 Mr'37:542 **tv**

Description of the "Franklin system" using a semi-dry mix (1:6) and traveling forms of light metal. An ordinary house requires one cavity-wall form, one partition form, two cores, and external and internal corners. The set illustrated are for a 4-2-4-in. hollow wall. Forms are about 3 ft. x 1 ft. 6 in. and can be handled by a single man. In one day 120 ft. of wall 1 ft. 3 in. high can be built by three men. (One mixing, one handling concrete and one tamping.)

Also in Architect & Building News (London) 5 Mr.'37:309 tv

COSTS

Cost analysis of an all-wood house. (C. P. Ulmer). American Builder & Building Age. Mr'37:138-144 **gpstv**

Complete cost breakdowns of Purdue Housing Research House No. 5. General contract $5000. Finished July 1936.

Summaries and breakdowns include labor, material, profit overhead and per cent of total cost for each trade.

FIRE PROTECTION

Before the Fire Department arrives. (From National Safety News). Business Digest. Ap'37: 34-38 **t**

Description of the four principal types of fire extinguishers: Carbon tetrachloride, Soda-Acid, Foam and Carbon dioxide. This article tells for which classes of fire each is appropriate, and its method of operation. There are notes on large systems and on the various kinds of fire hose.

HEATING & AIR CONDITIONING

How to design a mechanical warm-air system. Heating & Ventilating. Ap'37:44-51 **dgt**

Reprint of Technical Code for design and installation recently adopted. This applies to systems under 250,000 Btu./hr. at the registers, air volumes not over 5500 cfm., and buildings not over three stories high. There are clear sections on estimating heat loss, selection of furnaces, design register air temperatures, duct design procedure, controls, construction details, and tables of properties, elbow equivalents, conversion tables, graphs, etc.

Heating and ventilating equipment for buildings. (Lecture by F. B. Turpin). The Builder. (London). 26 F'37:484-485 **t**

Table of recommended temperatures and air changes for various parts of six types of buildings. Various phases of heat output and control are discussed. Examples of reduction of heat transmission coefficients are given for several wall and roof constructions. The report ends with a description of modern heating, ventilating and air conditioning equipment.

Handling the Summer load. (V. L. Sherman). American Builder & Building Age. Mr'37: 100-104 **gst**

Article on summer cooling for residences. Graphs of typical conditions. Section of a typical installation. Description of operation of plants using ice, mechanical refrigeration, and city water.

Measuring the odors in air conditioned structures. (V. A. Gant & H. D. Shaw). Heating & Ventilating. Ap'37:40-41 **dt**

Abstract from Industrial & Engineering Chemistry. Complete air conditioning

XUM

Grand Ballroom, Hotel Astor, New York. *Decorators:* The Walter M. Ballard Co. *Carpet Counsel:* The Bigelow Weavers.

WOVEN BY THE BIGELOW WEAVERS

CARPET COUNSEL

BY THE BIGELOW WEAVERS

. . . viewed by Samuel Revness

of WALTER M. BALLARD CO., *Decorators*

"We take carpets very seriously," says Mr. Revness. "They're extremely important in working up our decorative schemes.

"Often, to meet specialized requirements, we need patterns or colorings that can't be had in stock goods. In such cases, we've found Bigelow's Carpet Counsel service particularly helpful. Their people have given us intelligent cooperation and have helped us to get exactly what we wanted."

Coming from one who knows us as well as Mr. Revness, we believe that means a lot. We've had the pleasure of working closely with his firm for many years—and on many important projects. To name a few: the Astor, Commodore, Raleigh and Copley Square Hotels —the U. S. and Munson Lines—the N. B. C. Studios.

Leading architects and decorators from coast to coast have found us helpful in finding the right answer to their carpeting problems. When *you* face one, won't you call us in as Carpet Counsel?

Contract Department, Bigelow-Sanford Carpet Co., Inc., 140 Madison Avenue, New York.

involves the control of odors but until this device was developed there was no way of checking efficiency of equipment. Briefly, the process freezes samples of recirculated, odorous air and moisture and then tests the liquid resulting from melting this frozen smell with an osmoscope. This instrument proportions odor-laden air and fresh air according to a calibrated scale. The relative intensity of the odor is then judged by sniffing at various settings of the scale until the point is reached where the odor is barely detectable.

Chemical analysis will trace the substances involved if desired but odors are often so complex as to make complete determination impracticable.

This abstract tells of tests made with air taken from a railroad car of the club lounge type.

LIGHTING

Report of the Architectural Conference on Lighting. The Builder. (London). 26 F'37:485 †

Brief notes on addresses and discussions. One of the items mentioned was ventilation of show-windows with high-wattage illumination. It was reported that for foodstuffs there are several installations of show-window refrigeration to overcome this heating effect. One speaker told of an American store with such intensive general illumination that eight times the amount of heat required for the main selling space was generated by the lamps. This heated air is exhausted, filtered and circulated to other floors at a saving of some $20,000 in heating equipment.

MATERIALS & FINISHES

Beryllium—Lighter than aluminum, harder than steel. Science Digest. My'37:93-94 †

Relative of emerald and aquamarine. Two per cent of this new metallic element added to copper forms a ductile alloy which can be teased by heating and cold working from a tensile stress of 60,000 to 170,000 lb. sq. in. This alloy is reported to have five times the wearing resistance of phosphor bronze, great fatigue resistance, to be highly resilient and incorrodible. Tools, springs, switch blades, gears and wire cloth are some of the applications.

What is Fresco? (E. Hanson, from Professional Art Quarterly). Business Digest. Ap'37:41-42 †

Description of the familiar process of painting on wet plaster. Data on time element: 190 sq. ft. in 21 days. Enduring qualities are due to chemical action producing carbonate of lime which, however, is turned into a weak sulphate in an industrial atmosphere such as that of London. Frescoes will not stand up in such localities.

What is Lacquer? (G. Klinkenstein, from Metal Industry). Business Digest. Ap'37:13-16 †

Three different types: the shellac made from a resinous secretion of Indian insects; the Oriental finish made from the sap of a species of sumac; and the modern industrial finish made from nitrocellulose, an ingredient of explosives. This article also goes into the distinctions between lacquers and varnishes.

The lacquer industry has developed since 1923, when nitrocellulose solutions of low enough viscosity were first made. The importance of proper formulation for the particular surface is emphasized. There is a special lacquer for every kind of metal used by industry and for every type of surface and service requirements. There are no limits to color and it can be made perfectly transparent.

The semi-continuous sheared plate mill at Homestead. U. S. Steel News. Ap'37:12-13 ptv

Readable description of the process of making plate steel from thick and heavy slabs. In 1½ minutes after heating a slab 4 ft. 6 in. x 15 ft. x 9 in. thick (weight over 12 tons) it is rolled into ⅝-in. plate 4 ft. 6 in. in width and 260 ft. in length.

Data on other sizes are also given, from the longest (480 ft.-⅛-in. thick) down. The mill can roll widths from 20 to 93 in., and thicknesses from ⅝ to 3/32-in.

There is a diagrammatic plan of the mill (1890 ft. long), and a fully illustrated report of the various stages of the processes.

Design modernization & cements dominate concrete meeting. Engineering News-Record. 4 Mr'37:340-343 gt

Report of the N.Y.C. Convention of the A.C.I. in February. Subjects included: progress in European practice; American developments in cements (normal Portland, high-early-strength, moderate heat, and sulphate resistant); use of salt water in mixing and curing; Portland-puzzolan cements; tests on cements made with fly-ash; concrete repairing; vibration of pavement concrete; structure design; discussion of the new Joint Committee Report to appear late this year or early next year. The notes on the latter mention briefly its provisions for materials, placing, details, stresses, theory, beams, slabs and columns.

The Magic Powder. (Portland cement). U. S. Steel News. Mr'37:3-6 tv

A readable "commercial." Description of the processes of cement manufacture, from initial quarrying of limestone, crushing and drying materials, weighing, grinding, burning, to clinker grinding and final packing. A number of curious items await the reader or visitor to a mill—such as the huge kilns which are the largest pieces of rotating machinery in industry, sieves with 40,000 holes to the square inch which will hold water but not the finely ground cement, and finally, sacks which are tied *before* they are filled.

Wood-destroying insects. (From paper read by R. C. Fisher). Architect & Building News. (London). 26 F'37:281 †

Mainly about the Lyctus ("Powder-post") Beetle and the "Death-watch" Beetle. Only the sapwood of hardwoods is subject to attack by the former insect.

Coniferous woods are immune. Naturally starch-free timbers seem also immune and it has been found possible to accelerate the removal of starch from green timber by application of heat and humidity.

The Death-watch Beetle thrives on warm, moist conditions and the presence of decay. It is recommended that the ends of timbers be not solidly built-in, but that they be ventilated to avoid damage from this source.

PLANNING & DETAILS

Problems of city traffic, etc. (G. Görres). Deutsche Bauzeitung. (Berlin). 3 Mr'37:146-148 pst

Discusses and suggests solutions for three problems: (1) The elimination of cross traffic on main thoroughfares by placing barriers across side streets and forcing vehicles to enter them from other end; (2) Parking—in interior of blocks; and (3) Widening of streets of old towns by means of sidewalk arcades built into the existing facades.

Cinemas. (F. E. Towndrow & R. L. Stubbs). Design & Construction. (London). Mr'37:182-209 pstv

Brief technical notes on planning and acoustics. Illustrations of 28 British examples and four in other countries. There are also a few details of decoration.

Furniture and decorative arts of the 6th Triennial Exposition at Milan. (Renato Pacini). Architettura. (Milan). F'37:65-87 tv

Brief Italian text and captions for over 50 photos of furnished interiors, display galleries, objects of decorative art, and decorative paintings.

Pavilions for the Paris International Exposition 1937. Kokusai-Kenchiku. (Tokyo). F'37:97-106 psv

Plans, sections, perspectives and views of models of structures to represent Japan, Germany, Belgium, Great Britain, Austria, Finland, Czecho-Slovakia, Jugo-Slavia, Switzerland, Egypt and French Africa.

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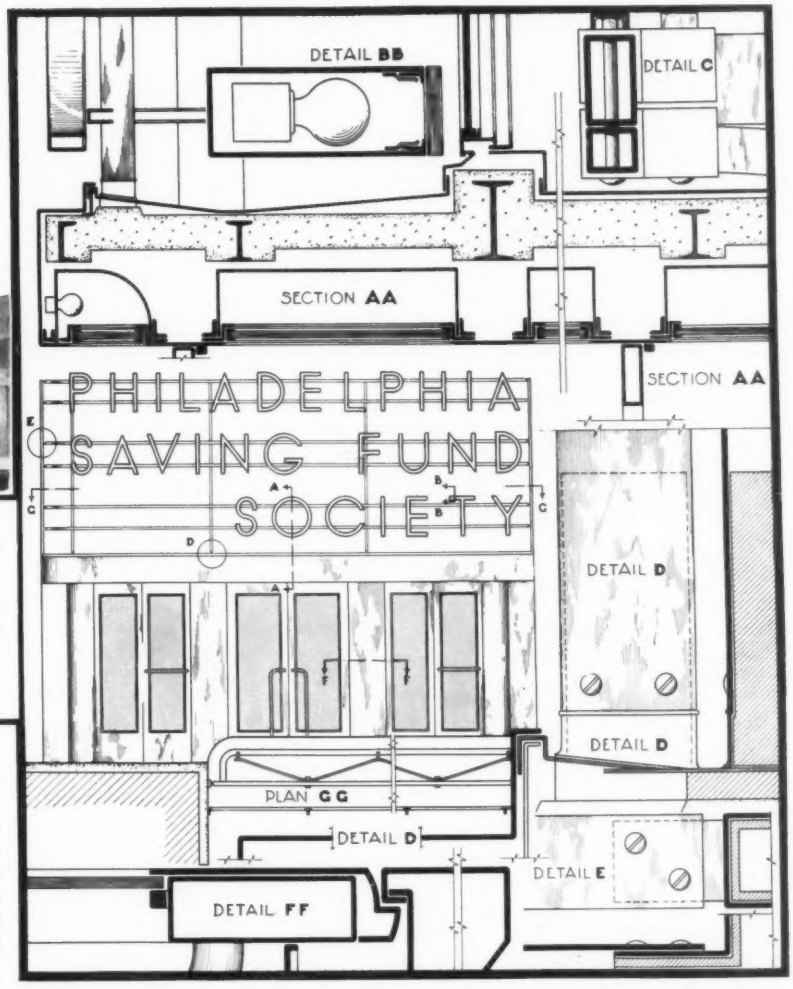
(Howe and Lescaze, Architects. General Bronze Corp., Fabricators)



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UNITED STATES STEEL

SMALL HOUSE PRACTICE

Two Years' Progress in the Concerted Endeavor to Solve Its Complex Problems

IN the spring of 1935 the American Institute of Architects, meeting in Washington, endorsed the proposal of the Committee on Housing to establish, through the assistance of the chapters, local groups of architects prepared to furnish plans, specifications and individual supervision in the small house field.

Two years have passed since that time, and it seems well to look about us to find out just how far we have gone and along what road. The progress has been slow, discouraging in many particulars, but, as Walter R. McCornack, Chairman of the Committee on Housing, points out in the March 1937 *Octagon*, the objective is not to be gained in a moment, but possibly over an extended period of experiment and organized effort.

Mr. McCornack repeats what has been said many times but what will bear even more repetition:

"Unless some action is taken by the architects they will find themselves gradually being eliminated from the home building field and supplanted by commercial plan services, by departments of government agencies, or by industrial and financial groups organized to supply plans. It will require *ability, courage,* and *patience* to make architectural service on a professional basis generally available to the small home builder on terms he can afford to pay. . . .

"What will happen if the architects do nothing about this problem? The answer is simple and the issue clear.

"The trend is toward group development in housing. If the architects continue to ignore the single house and its owner, who too often is the victim of unregulated agencies operating on a basis of self-interest, the architects will be forgotten when group housing developments come. We spend a lot of time trying to eliminate government architectural agencies after they have been created. *This affords us an opportunity to prevent the formation of more of them.*

"If the small house problem is solved to the advantage of the small home owner, the architectural profession will find itself in a dominating position in the home building field and will never again be found on the defensive with governmental agencies, speculative builders or entrenched plan-book services which supply good, bad and indifferent drawings, specifications and supervision through material dealers and builders, without regard to the requirements of the individual or the community.

"We find ourselves with an opportunity to co-operate with two capably operated government agencies, both sympathetic toward our viewpoint. The architects can ill afford to turn away."

Here, then, follows an attempt on the part of the editors of this magazine to report the present status of this movement in detail as observed in many communities where the first call of the Institute has been heard and heeded.

Boston, Mass.

Almost all of the efforts of Small House Architectural Associates of Massachusetts have been devoted to publicizing the plan to the general public and the banks. This preliminary work having been accomplished, in a measure, the group is about to make a drive for membership. At present there are ten active members and three who would support the idea but do not wish to have active participation in the service. It is hoped that the membership may be increased so that eventually there will be a participating architect for every 15-mile span on a radius centering in Boston and covering the state.

Each member pays $25 initiation fee and a fee of $10 from each commission obtained through the service. The Federal Home Loan Bank of Boston has contributed approximately $500 toward the printing of brochures and other material. With increased membership and a growing use of the service by the public, the group expects to be able to finance the support of an independent office by these $10 fees. At present the group is co-operating with the Architects' Small House Service Bureau in a rent-free headquarters at the Building Arts Exhibit.

As to particular details of procedure, an architect member is assigned to each member bank of the Federal Home Loan system in this community, and takes care of all work coming through that member bank. Inquiries arising from other sources are assigned by a committee to the architect working in the nearest territory. He does the supervision and makes any necessary changes in the stock designs.

The Boston group lays stress on the principle that stock designs are used in every case unless the owner prefers to elect the customary full architectural service. Up to the present, these stock designs have been obtained from established agencies, principally the Architects' Small House Service Bureau. Every member, however, agrees to make at least one design per year, if called upon, to be placed in the available portfolio and used on a royalty basis.

The President of Small House Architectural Associates of Massachusetts is Dana Somes, 234 Boylston St., Boston.

Baltimore, Md.

The Architectural Service Corporation of Maryland is apparently almost inactive. This group's primary difficulty has been in securing a sufficient number of designs to build up a useful portfolio. The designs with which the group started never seemed to provide just the accommodations required by the prospective client.

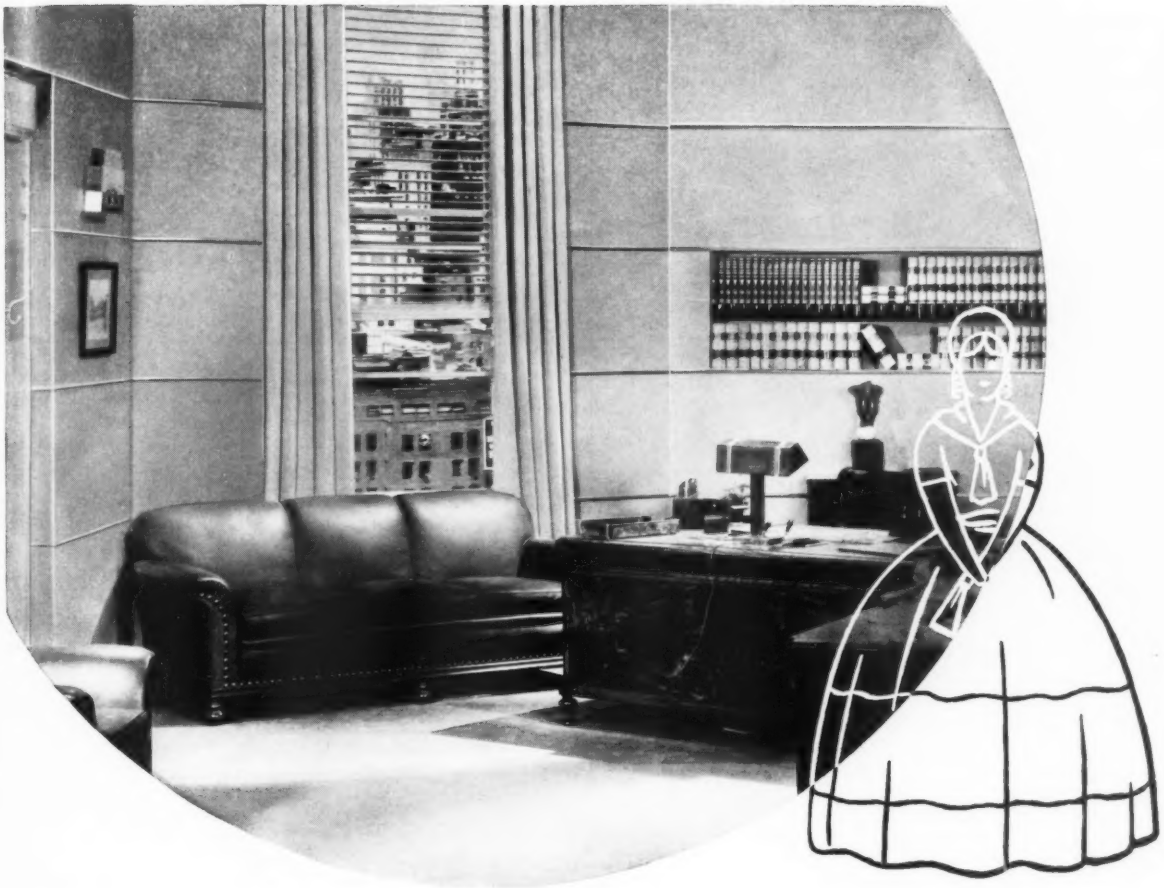
The opinion among the members is that the successful launching of such a venture would require the investment of considerably more time and money than can be put into it by the average architect.

For the present, the organization is co-operating with the local Federal Housing Administration and the Real Estate Board in sponsoring a "Better Housing Campaign."

The President of the Architectural Service Corporation of Maryland is E. H. Glidden, Jr., 113 West Mulberry St., Baltimore, Md.

Birmingham, Ala.

About a dozen architects in this community have agreed to contribute a maximum of $10 each monthly toward the expenses of launching the project. A plan is being considered, looking to the support of utilities, and establishing a ground-floor office and display room, to be in charge of a salaried secretary. It is possible that the group may find it necessary to secure further financial assistance, possibly



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by including, in some form of collaboration, material manufacturers and dealers.

The head of the local organization committee is Lawrence S. Whitten, an architect in the employ of the Birmingham Electric Company.

Little Rock, Ark.

This group is in the process of organization. The manager of the local Home Loan Bank has held several meetings for the purpose of explaining to the lending agencies, material dealers and others the need of such a plan. These meetings have met with the unanimous approval of those represented, and the lending institutions have agreed not to lend money for building unless the borrower agrees, at least, to the limited service offered by the local architectural group.

One of the difficulties has been the assembling of a sufficient number of designs suitable to this climate in the smaller house range.

The head of the organization committee is Frank J. Ginocchio, Jr., Hall Building, Little Rock, Ark.

Chicago, Ill.

The Associated Home Architects in Chicago has been endorsed by the Chicago Chapter, A. I. A. Ten sketch designs have been prepared, accompanied by a general specification and estimates of cost. The service offered is of the conventional sort, except that the schedule of charges provides remuneration in the form of fixed fees which approximate 4% of total costs.

An affiliation has been made with the Hinsdale Federal Savings and Loan Association, which organization has appropriated funds to pay for advertising counsel. A presentation brochure has been prepared through this channel.

It is the group's intention to expand as rapidly as circumstances permit, enlisting other lending agencies in the suburban territory. As yet, there is lacking the active endorsement of the local Federal Home Loan Bank.

Sketches, descriptive pamphlets and the like are on exhibition in quarters provided with the Hinsdale Savings and Loan Association. An architect member of the group is in attendance on Saturday afternoons answering inquiries. A design portfolio is supplemented at present by the plan books of the Architects' Small House Service Bureau.

Earl H. Reed, Jr., is Chairman, Tribune Tower, Chicago.

Atlanta, Ga.

The operating group here comprises the chapter, although there is a comparatively small number of members who are taking active part. It is the present purpose of the group to follow the program drawn up by the Home Owners Loan Corporation, since it seems to offer the best pattern for organization and procedure.

The Chairman of the group is William J. Sayward, 101 Marietta Street Building, Atlanta, Ga.

Los Angeles, Cal.

The Southern California Chapter to date has never engaged in the operation of a small house plan bureau and it is unlikely, in view of the present attitude of its members, that the chapter itself will adopt such a service. Conditions in this part of the country are thought to be quite different from those in the East and other communities, and there are many houses in the $5000 class being built with complete architectural service. On the other hand, there are a great many more being built without such professional service. At the present time, the chapter is striving to arrive at some

YOU CAN DO THINGS WITH TILE!

For Example—by using this and this you get this

■ Only about six months ago, Revere introduced Revecon, a new system of aluminum extruded shapes for holding all types of flat sheet materials in place. The few months that have followed have seen a fast growing number of architects using the Revecon System with porcelain enameled sheets, marble, steel and synthetic board type finishes of many kinds to achieve striking results, both exterior and interior.

REVECON

■ Now, the *Revecon System* is creating remarkable design effects and erection economies with Ceramic and Markwa, the marble tile. So simple is the use of Revecon, that any contractor can work with it.

VERSATILE IN ITS APPLICATION

There is literally no limit to the design possibilities it offers. You'll want to know more about the Revecon System and its many advantages. You can learn all about it in your "Architects' Desk Manual of 'Time-Saver-Standards.'" If you do not have a copy write us on your own letterhead for the Revere Revecon Technical Handbook. Please address your request to our Executive Offices, 230 Park Avenue, New York City.

The exhibit panel above suggests one of the many effects possible with Revecon. Here, Markwa, the marble tile, a new product of the Vermont Marble Company, with Revecon Members 212SF and 216SF, achieve a brilliant effect. Inset shows how the tile is held in place.

Revere Copper *and* Brass

FOUNDED BY PAUL REVERE 1801

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EXECUTIVE OFFICES: 230 PARK AVENUE, NEW YORK CITY

House in Scituate, Mass., Painted with Cabot's DOUBLE-WHITE and Cabot's Green Gloss Collopakes, Architect, Royal Barry Wills, Boston.

Long-Lasting WHITE *Non-Fading* GREEN

Architects and builders need no longer fear early fading or discoloration when they use *white* and *green*—favorite color combination of home buyers and home owners. The basic causes of these troubles have been eliminated in Cabot's DOUBLE-WHITE and Green Gloss Collopakes. . . . The pigments in DOUBLE-WHITE are immune to chemical reactions with atmospheric gases which soon give many whites a dingy yellowish or grayish tinge. Green Gloss Collopakes contain no filler—chief cause of fading in cheap green paints. Use these *fast-color* paints, and your white houses with green blinds will look new and inviting year after year.

The White Book-FREE

Write today for Collopake Color Card and your copy of *The White Book*. It gives full information and contains photographs of many prize winning houses painted with Cabot's DOUBLE-WHITE, *Old Virginia White*, and Gloss Collopakes. Samuel Cabot, Inc., 1263 Oliver Bldg., Boston, Mass.

Cabot's

DOUBLE-WHITE

and Gloss Collopakes

(COLLOIDAL PAINTS)

solution to what is recognized as a real problem, and a committee has been appointed to investigate the possibilities. Some of the members believe that the real answer lies perhaps rather in group construction as contrasted with individual projects. In group construction the work is done by and for one organization in conjunction with planned communities. Such a program of course would not salvage nor safeguard for financial institutions the distressed properties in widely scattered areas, but the feeling prevails, at least among some of the members, that an architectural service for group construction may be the only type which would render a real public service without impairing the professional standing of the architect.

Ralph C. Flewelling is President of the Southern California Chapter, A. I. A.

New York, N. Y.

This group has been learning many things by trial and error during the past two years, and these lessons are as yet not conclusive in pointing out the best way in which the small house problem can be solved for the New York area.

The group started as Small House Associates, with the idea that, through co-operative effort, small houses could be designed and their construction supervised for a fixed fee which would not be prohibitive for that large group of people interested in building a house costing between $4000 and $8000. Experience soon indicated that such an enterprise requires, in this particular locality, a large volume of business. It was felt that the only way this volume could be built up is through publicity to teach the public the value of architectural service. At present the group is in the process of determining more definitely future procedure.

Henry Otis Chapman, Jr., is President of The American Society for Better Housing, Inc., 101 Park Ave., New York, N. Y.

St. Louis, Mo.

This group is not yet functioning but is completing its organization and expects to start operations shortly. Brochures are being printed and the stock designs available are being estimated for costs. At present the group seems likely to adopt the plan of organization and procedure as outlined by HOLC.

P. John Hoener, 3605 Laclede Ave., St. Louis, Mo., is Chairman of the committee of the St. Louis Chapter, A. I. A. during the activity looking toward the formation of Small House Architectural Associates of Missouri.

San Antonio, Tex.

The plan of operation in the minds of a local group of architects differs in some respects from the typical one. It contemplates the opening of a central office to which, through publicity and personal contacts, the prospective builders of small houses may come. For the first twenty or thirty clients, designs would be developed by the architectural groups to fit these individual cases in the regular way, but with the understanding that these designs would go into the portfolio for use as stock plans. Thereafter these would be publicly available—with such changes as might be incorporated in an overlay sheet or two. The San Antonio group has little faith in the efficacy of stock plans prepared in advance for a hypothetical client. These men believe they might design—for individual clients—much nearer to the prevailing local needs and desires, as well as keeping in bounds as to cost. It is felt that many details might be standardized for the whole portfolio, and a major part of the specifications.

HARMONY is the word for AZROCK

Due to the many beautiful colors, plain or marbleized, the different sizes and the innumerable combinations possible therefrom, Azrock Carpet Tile allows the architect to execute original floor treatments of the most interesting kind that are not only in complete harmony with but, as shown in the photograph above, actually emphasize the attractive appearance of the surroundings.

AZROCK
(TRADE MARK REG. U. S. PAT. OFF.)
CARPET TILE

With all its beauty, Azrock Carpet Tile is exceptionally durable, manufactured for long life and hard usage. It is moisture proof, fire-resistant, will not warp nor check, insulates against extremes of temperature, is easily cleaned (burning cigars or cigarettes leave no permanent stain), inexpensively maintained, can be laid at a minimum of time over old sub-floors or new, and is gently resilient for the reduction of noise and for comfort underfoot. Truly, Azrock is the ideal modern floor!

Write to Uvalde Rock Asphalt Co., San Antonio, Tex., for name of your nearest Azrock distributing contractor.

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And today, all factors of upkeep and appearance favor the use of Marble from our quarries.

This unique stone is remarkably adaptable to pleasing design and is reasonable in cost. Let us send you samples, photographs, details and specification data.

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***Branch Plants in these cities.**

VERMONT MARBLE

In discussing this plan with architects of other cities in Texas and adjoining territory, it met with a welcome reception. Moreover, it was felt that an interchange of the stock plans might be arranged to mutual advantage.

Ralph H. Cameron, Majestic Building, San Antonio, Tex., is at present attempting the organization of a small group, sponsored by the local chapter.

San Francisco, Calif.

Two years' futile effort to establish a weekly newpaper page, promoting public understanding of the architect and his services, has indicated the need for an authoritative agency to which the public might turn for advice and informative discussion of its home-owning ambitions.

With a membership of nine architects, each contributing $15, the Architects' Home Building Service was organized and, early in 1934, opened an office in a local department store. A year's experience, during which the membership increased to fifteen, made apparent the fact that the location was not suited to the success of such an effort. Many visitors called, but not one job resulted.

The organization now numbers thirty, each pledged to a strict adherence to the standards of practice of the A. I. A., and to the maintenance of a 10% fee. The cost of operation is borne by the $28 per year paid by the architect members in quarterly dues, and by a monthly sustaining fee voted by the Northern California Chapter. In addition, the members pay in a fraction of the gross fees resulting from Service-originated commissions. In the year March 1, 1936-March 1, 1937, approximately $220,000 worth of building was originated, and considerable business has gone directly to the architects as a result of visits to the exhibit, to information furnished, etc.

A considerable factor in the success of the effort is the centrally located headquarters, made available at a nominal cost above maintenance by the Bank of America. Without any advertising, the location itself attracted more than 5000 definitely interested visitors in the past year.

The San Francisco group has maintained that only men of unimpeachable professional reputation were worth employing as architects, and that the services of such men were unquestionably worth a fee of 10%. Once the potential client has been made to realize the value to him of sound design, and the assurance which competent architectural supervision affords his investment, this group has had no great difficulty in convincing him of the justice of a 10% fee.

P. F. McGuire is Director of Architects' Home Building Service, 200 Montgomery St., San Francisco, Calif.

Columbus, O.

An organization has been formed, under Chapter guidance, with the title, Architects Small House Service, Inc., and conforming to the national pattern suggested by HOLC. As yet the board of directors and the design committee are studying the problem.

John Quincy Adams is Secretary of Architects' Small House Service, Inc., of Columbus, Ohio, 55 Lexington Ave.

Minneapolis, Minn.

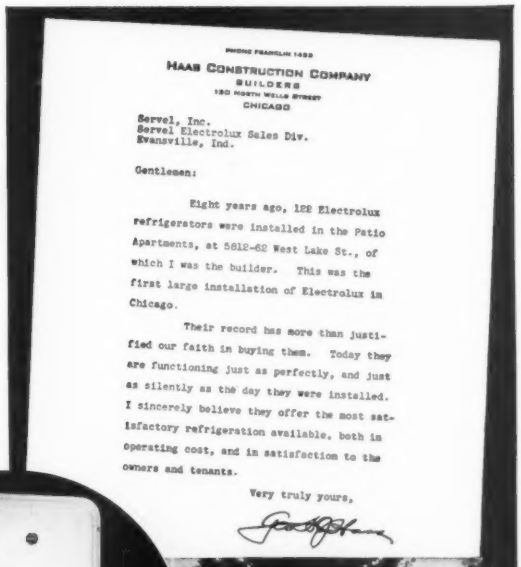
Architects Home Plan Service has been organized along the lines of the national pattern. It has in preparation a booklet of designs, most of which were chosen from those of the Architects' Small House Service Bureau. Additional designs are being made by the group members.

Co-operation has been arranged with the local building and loan associations who are operating as Federal Savings and

During 8 years' constant service in Chicago

SERVEL ELECTROLUX

PROVES PERMANENTLY SILENT ...ECONOMICAL TO MAINTAIN



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120 NORTH WELLS STREET
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Eight years ago, 122 Electrolux refrigerators were installed in the Patio Apartments, at 5812-62 West Lake St., of which I was the builder. This was the first large installation of Electrolux in Chicago.

Their record has more than justified our faith in buying them. Today they are functioning just as perfectly, and just as silently as the day they were installed. I sincerely believe they offer the most satisfactory refrigeration available, both in operating cost, and in satisfaction to the owners and tenants.

Very truly yours,

The Patio Apartments, 5812 West Lake Street, Chicago, built by Mr. George H. J. Haas

"Gas Refrigerators still functioning as perfectly as the day they were installed," writes builder of Patio Apartments

EXPERIENCED OWNERS and builders everywhere are today choosing gas refrigeration for their new properties because they know it's permanently silent. Because they know it gives *continued* low maintenance cost. Because they know it means more years of all-round satisfaction for them and their tenants. These advantages—resulting from Servel Electrolux' different operating method (no moving parts in the entire freezing system)—have been *proved* in 8, 9, and 10 years of actual service.

An example of this amazing performance record is described in the letter from Mr. George H. J. Haas shown above. Mr. Haas made the first large installation of gas refrigerators in Chicago more than eight years ago. And today he writes, "I sincerely believe that they offer the most satisfactory refrigeration available."

In hundreds and hundreds of buildings, Servel Electrolux has given similar demonstrations of its lasting efficiency. That's why it's constantly growing in popularity, why it's now favored by more owners than ever before.

If you want refrigeration that will assure permanent silence and continued low cost, see the new Servel Electrolux models on display at your local gas company showroom. Servel, Inc., Servel Electrolux Sales Division, Evansville, Indiana.

TUNE IN "THE MARCH OF TIME"—Columbia Network—Thursday evenings, 10:30 Eastern Daylight Time. Sponsored by Servel Electrolux.

EXPERIENCED BUILDERS SPECIFY SERVEL ELECTROLUX
THE GAS REFRIGERATOR

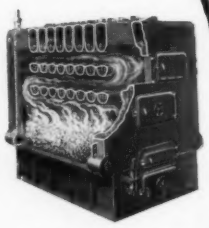
Prevents Stoker Scoots

IT has to do with *pull* and *push*. *Hand-fired* boilers have *chimney pull*. *Stoker-fired* ones, have *fan push*. Fan push is stronger and there's more of it, than chimney pull. Has to be, to burn cheaper grade coal. That same push speeds up the flow of hot gases from fire-box to smoke box, sending them scooting up chimney.

Short fire travel boilers are chimney scooters. Burnham Boilers' three times back and forth fire travel *prevents chimney scoots.*

Stokers cut down fuel costs. Burnham scooter-proof boilers cut down heating costs. Their long fire travel makes short coal bills.

Send for Catalog. Get the full facts. See for yourself.



This shows the three times back and forth fire travel.

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Loan institutions. The lending agencies are enthusiastic and will help to sell the program to individual borrowers.

Robert T. Jones is Technical Director of Architects' Home Plan Service, with offices at 1200 Second Ave., South. Minneapolis, Minn.

Washington, D. C.

With the approval of the Washington, D. C., Chapter, A. I. A., and with the assistance and co-operation of the Federal Home Loan Bank, a group has been feeling its way along this new form of architectural practice. Through the Perpetual Building Association, which afforded space for display and consultation purposes, and also a campaign of advertising carried directly to the public, the plan has been in operation now for more than a year. It is as yet too early to report any definite conclusions from this experience.

E. P. Schreier, 1517 H Street, N. W., Washington, D. C., is secretary of the Washington group of Architects' Small Home Service.

Buffalo, N. Y.

The Buffalo group, which was one of the earliest formed, is, we understand, undergoing something of a reorganization, and has nothing at the moment to report.

James W. Kideney is chairman of the directors of Small House Bureau, 505 Franklin Street, Buffalo, N. Y.

Indianapolis, Ind.

Twelve local architects are members of the Small House Architectural Service, an organization with the make-up and general plan of procedure as proposed by HOLC. Some fifteen new plans are still in a sketch stage, and in order to meet immediate demands, a group of some thirty designs has been taken from The Architects' Small House Service Bureau. These plans were reproduced in loose-leaf brochure form at the expense of the Federal Home Loan Bank for distribution to local building and loan associations which are members of the Federal group.

Co-operation with leading institutions is, up to the present, limited to an arrangement with the Railroadmen's Federal Savings & Loan Association, which organization is advising its borrowers to avail themselves of this architectural service, though such service is as yet not mandatory.

Meanwhile, through the Railroadmen's Federal Savings & Loan Association, local newspaper publicity and advertising is being carried to the public.

Clarence T. Myers is temporary secretary of Small House Architectural Service, and the headquarters are in the Building Material Exhibit, 333 North Pennsylvania Street, Indianapolis, Ind.

ERRATA

Editors

AMERICAN ARCHITECT and ARCHITECTURE:

In advising you that the landscape work at Chatham Village was done by Mr. Ralph Griswold we should also have stated that Mr. Theodore Kohankie was directly responsible for the work done on the Second Unit, succeeding the original landscape architect, Mr. Griswold, when the latter became Superintendent of City Parks in Pittsburgh.

INGHAM & BOYD

(Signed) CHAS. T. INGHAM.

BUYING for ECONOMY

with no compromise on QUALITY

"TIMBERTEX" ASBESTOS-CEMENT SHINGLES
Weathered wood texture

"BRICK-TYPE" ASBESTOS-CEMENT SIDING
Rigid Strips—looks like 'wire-cut' brick

The Ruberoid-Eternit Building Products pictured on this page are made from fire-proof, rot-proof asbestos, rock or asbestos-cement. Each provides qualities of comfort, safety and protection with reduced upkeep costs.

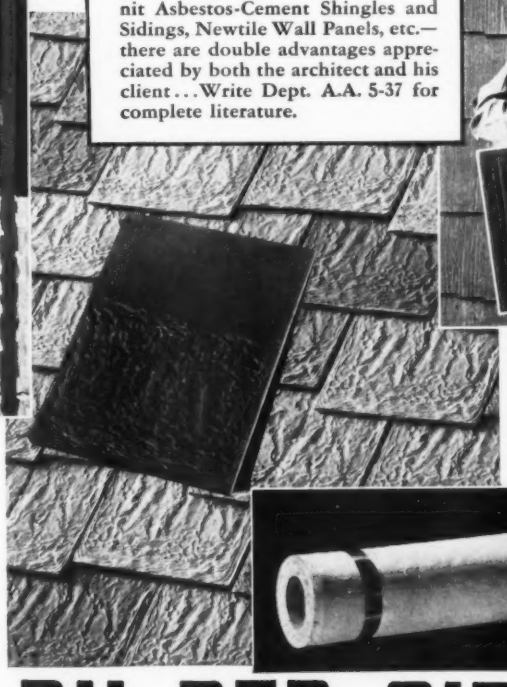
When these qualities are combined with beauty—as in the case of Eternit Asbestos-Cement Shingles and Sidings, Newtile Wall Panels, etc.—there are double advantages appreciated by both the architect and his client . . . Write Dept. A.A. 5-37 for complete literature.

"NEWTILE" ASBESTOS PANELS
Lustrous Wall Panels in pastel shades

ROCK WOOL INSULATION
Loose for packing, or in prefabricated bats

"TIMBERTEX" ASBESTOS-CEMENT THATCH SIDING
The beauty of staggered wood shingles

ASBESTOS PIPE COVERING
Available with Pyroxylin Finish. Ideal for cellar game rooms.



"GOTHIC" ASBESTOS-CEMENT SHINGLES
Textured like rugged rock

RU-BER-OID

ROOFING AND BUILDING PRODUCTS

THE RUBEROID CO., Executive Offices: 500 FIFTH AVENUE, NEW YORK, N. Y.

XUM

The Room will now Come to Order...

The architect's experience has taught him that an executive's office must be unobtrusively attractive. So he starts with the floor—specifies a hand-laid design of Custombilt Tile—builds-in quietness, comfort underfoot, lasting cleanliness. He knows that walls, furnishings, furniture, and every other detail quickly "come to order" under this real decorative leadership, thus providing a genuine air of becoming dignity.

You, too, can plan this pleasing executive-office effect by specifying a hand-laid floor of the new Sloane-Blabon Custombilt Tile

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The Longest-Wearing Comfortable Floor!

Hard Maple Flooring has proved its economy in countless school gymnasiums, shops, classrooms, assembly halls. Below, block floor, heavy-duty-finished, in Norwood, Ohio school.

This Punishment to Bowling Alleys Shows the Way to Million-Dollar Savings in Industry!

Wham! As so often happens, a 16-lb. ball hits the floor at 20 miles an hour. That's punishment! But look at the floor where the ball struck. There's no split, no splinter, no dent! For it's Northern Hard Maple that ball bounced on. Ask the manager.

"Sure," he'll probably say. "Specialists always use Hard Maple in bowling alleys—and for the pins. Hard Maple is the one material that will stand up under that pounding year after year."

Note *where* Hard Maple is used in bowling alleys. (1) The 12 to 16 feet *before* the foul line (where the bowler runs and slides); (2) From 13 to 16 feet *after* the foul line (where the ball hits the floor); (3) From 4 to 8 feet at the end (where the ball strikes the pins)—in other words, wherever real wear occurs.

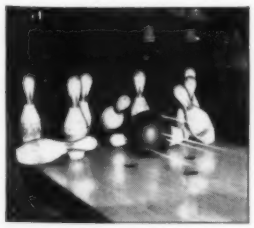
Industry can make million-dollar savings by flooring with Hard Maple—for countless plants have proved that this harder hardwood demonstrates the same stamina, same economy, under severe industrial use. So tough-fibred, so tight-grained, its resistance to indentation and abrasion is truly remarkable. Many years of service cause no splinters, slivers, or ridges—this *harder* hardwood stays smooth.

This non-slippery smoothness also means *exceptional sanitation* (no pits to hold dust)—*reduced cleaning costs* (brushing instead of scrubbing)—and *speeded-up traffic*. Further, Hard Maple's warmth, dryness and resilience *reduce fatigue* and favorably affect workers' efficiency And always, it simplifies alterations and offers low maintenance cost.

Before building or remodeling, be sure to investigate **MFMA*** Northern Hard Maple—the *longest-wearing comfortable flooring*—available in strips or blocks.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1784 McCormick Building, Chicago, Illinois

See our catalog data in Sweet's, Sec. 17/66.
Write us for folder on Heavy-Duty Finishes.



17,000 *smashes like this! A leading manufacturer guarantees his Hard Maple bowling pins not to chip, split or splinter for* 1,000 *games (average* 17 *"rolls" each).*

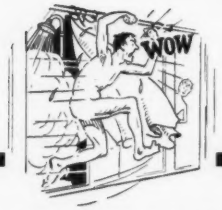
Shoppers don't tire on Maple flooring, and for stores Hard Maple affords lowest-cost-per-year-of-service, as in factories, mills, bakeries, warehouses, schools and homes.

Floor *with* Maple

***MFMA**—This trade-mark on Maple Flooring guarantees that it conforms to the exacting grade standards of the Maple Flooring Manufacturers Association. It protects you against species substitution and inferior grade. It assures you of *genuine* Northern Hard Maple. Look for it on the flooring you buy.

MFMA Approved

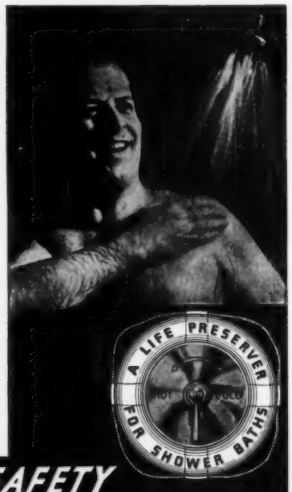
Want to eliminate the danger of scalding in your shower baths and stop unexpected changes in the water temperature?



● No more slipping in a soapy tub or on a wet tile floor while trying to dodge a "shot" of icy cold or scalding water—When you use a shower bath regulated by a Powers safety shower mixer the temperature remains right where you want it. You can really enjoy the thrill of a comfortable shower in absolute safety.

Why they're more economical—There's no loss of time or waste of hot or cold water while waiting for a shower at the right temperature — Powers mixers cost more —They're worth more.

Write for circular describing this remarkable shower mixer. The Powers Regulator Company, 2751 Greenview Avenue, Chicago. Offices in 45 Cities — see your phone directory.



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REPORTS from flooded districts:

"Your door was the only one that worked after the waters receded." Another user, "Completely submerged eight times, your doors are as sound as when put in." Another, "Your doors were more effective than our steel vault doors."

Superior PERFORMANCE characterizes Jamison-Built Doors. Bulletin on request.

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(See our catalog in Sweet's Catalog File)

TECHNIQUES

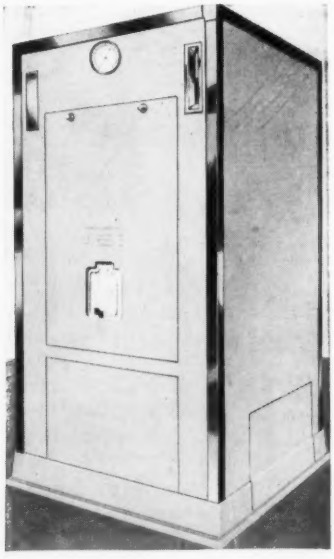
CONSTRUCTION

CONCRETE JOIST SPACING SCALES

A set of twelve concrete joist and rod spacing scales with design tables are now available from Universal Atlas Cement Co., Chicago. All of the standard spacings for joists-cast-in-place over 20-inch and 30-inch wide steel forms are given. The depths of the forms vary from 6 to 14 inches, and the widths of the joists from 4 to 7 inches. A 16-inch spacing is included for a 4-inch wide joist with which 4-, 6-, and 8-inch depths of 12-inch clay tile can be used as fillers between joists. Four standard spacings are provided for use with precast concrete joists. Scales are included for rod spacings in solid concrete slab construction. The tables on these scales show the necessary design data to make computations of depth of joists and slabs, and the bar sizes required for the sections selected. These scales are printed on a tough, stiff 150-lb. stock. They are available without charge to architects, engineers or general contractors. **792M**

HEATING

AUTOMATIC COAL BURNING BOILER

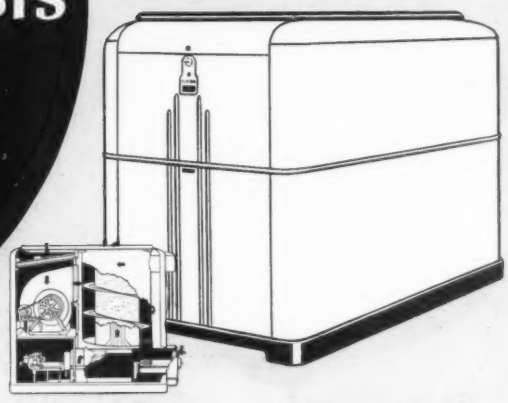


Two new models of the Ideal Boiler No. 21 for automatic coal firing have just been developed by American Radiator Company, New York. One model, designed with a high base and removable panel sections, permits the installation of a slide fired stoker with a minimum amount of work. The second model is made with a low base for front firing and both are designed to operate with any standard stoker of either the hopper-fed or bin-fed types. The chrome green enameled steel jacket trimmed with chromium is lined with two-inch air cell asbestos insulation. Gauge glass and other trimmings have been recessed. Equipped with a 100 gallon built-in domestic hot water supply heater, the new boiler has a fire chamber proportioned to provide for complete combustion of fuel and maximum heat transfer to the boiler water. The boiler is made in four sizes that will handle actual installed radiation of from 510 to 1110 sq. ft. for steam, and 815 to 1776 sq. ft. for water. Heating surface ranges from 42.3 to 79.5 sq. ft. as the size of the boiler increases. The minimum coal burner capacity ranges from 20 to 42 lbs. coal per hour. **793M**

AIR CONDITIONING FURNACES

The Rudy Furnace Company of Dowagiac, Michigan, offers a completely new line of coal, oil and gas heat air conditioning furnaces. Changes are in the nature of refinements in mechanical details and casing designs. The Oil Heat Air Conditioners are designed in two types; one consisting of two units, the heating and humidifying unit, and the

NORGE cuts home heating costs by conserving heat ordinarily wasted



HOME OWNERS can't escape heating costs—but the *amount* that must be spent for heating depends upon the kind of equipment used. For new installations or for modernization, Norge has a complete line of heating and air conditioning equipment that cuts costs to a minimum—sets new standards of efficiency.

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NORGE HEATING AND CONDITIONING DIVISION
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NORGE

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See the sensational New Rollator Refrigerators, Concentrator Ranges, Autobuilt Washers and Duotrol Ironers—the 1937 Performance and style leaders.

HC-6

CUTS HEATING COSTS AS MUCH AS 50%

Exclusive design of heat transfer unit makes possible a saving of up to 50% in heating costs for the average home now using old-fashioned equipment.

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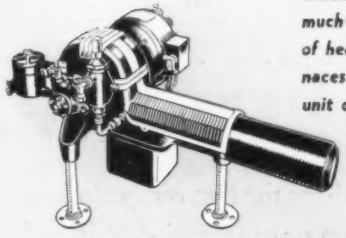
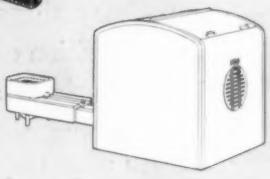
Filters, warms, humidifies, and circulates air in every room of the house. Can be adapted easily to full summer air conditioning as well. Delivers as much as twice the usual amount of heat that old-fashioned furnaces or boilers do from every unit of fuel.



WHIRLATOR OIL BURNER

The Norge Oil Burner operates on the exclusive Whirlator principle—clean, quiet, economical. For use in the Norge Fine-Air Furnace or in modernizing existing heating plants.

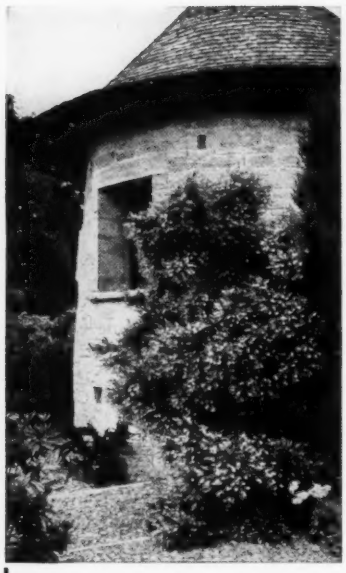


NORGE GAS BURNER

Cuts heating costs as much as 50%. Triple-control gives economy never before possible with gas. Be sure to get full details about this amazing burner.

NORGE COAL STOKER

Gives uniform heat, more heat, cleaner heat from cheaper coal. Eliminates smoke, soot and ashes because it burns fuel perfectly. Feeding mechanism of exclusive Norge construction — trouble-free, dependable. Gears are made by Borg-Warner experts.



Garden Decoration and Ornament

for Smaller Houses

by G. A. Jellicoe

The author, who is well known as a town-planner and designer of houses and gardens, analyzes in this profusely illustrated volume the structural features and ornaments of gardens for small country houses, suburban and town houses. *The London Times Literary Supplement* praised it for its "beautifully chosen illustrations" and spoke of it as "of a quality rare in modern garden books . . . full of stimulating ideas." *Country Life* says "it should be of great value to home and estate owners and garden lovers all over the world." $6.00

The Supervision of Construction

by W. W. Beach

This book is perhaps the first comprehensive treatment of the supervision of construction to be published and is indispensable to architects, engineers, construction superintendents, technical libraries, students and all interested in architecture and engineering. Written by one of the best-known architect-engineers in the Middle West, it is an authentic, up-to-date handbook that fills a long-felt need. Within its 488 pages are included all the details of the superintendent's work; there are appendices, 20 diagrams and illustrations. $6.00

Contents

The Duties of Superintendents
A Superintendent's Records
The First Day on the Job
Beginning the Work
Contract Changes
Foundations and Masonry Materials
Concrete Form-Work
Concrete Work
Concrete Reinforcement and Other Built-in Members
Waterproofing and Dampproofing
Finishing Concrete Surfaces
Roughing-in by Pipe Trades
Job Progress
Masonry
Terra-cotta, Cut-stone, and Pre-cast Stone
Structural Steel
Miscellaneous Metal-work
Structural Carpentry
Roofing and Sheet-metal-work
Furring, Lathing and Plastering
Marble-work and Tiling
Finish Carpentry
Finish Hardware
Glass and Glazing
Painting and Varnishing
Electric Work
Heating and Ventilating
Plumbing
Completion and Acception
Cost-plus Construction

CHARLES SCRIBNER'S SONS

ventilating and air-filtering unit. The other is a complete, compact single unit system. The ventilating and filtering elements are located directly behind heating and humidifying elements, separated from them by an insulated sheet of metal. B.t.u. output capacities are 160,000 and 100,000 per hour respectively. The Gas Heat Air Conditioner is designed to occupy a minimum of space and is in matching units. Heavy gauge steel casing of the heating and humidifying unit is lined with a 1" asbestos, air-cell insulator. The smaller ventilating-filter unit may be placed at either side or behind the heating unit. The complete unit consists of five major assemblies; the specially designed cast-iron furnace, the burner mechanism, the humidifier, the ventilating element, and the filters. All units are finished in a black, baked enamel process that produces a semi-lustrous effect called Satin-krack, and carry a guarantee of twenty-five years. **794M**

ROOM THERMOSTAT

A new low thermal inertia room thermostat, designed in the modern manner in dull silver and chromium, has been announced by General Controls Co., San Francisco. The Metrotherm embodies a tiny mechanism which allows adjustment of the degree of heat acceleration. In this way, the thermostat can be "tuned" to the type of installation to be controlled and to the load characteristics—thus said to result in maximum sensitivity and quick response to small temperature changes. Slender pointers in the unit indicate both the temperature setting and the actual room temperature. Vertical chromium louvers allow for free distribution of air, yet completely conceal the inner mechanism. The locking device is standard. The unit is also available with night switch and timer. **795M**

CONDITIONING FIREPLACE-FURNACE

Consolidation of the fireplace with the heating and winter air conditioning plant is found in a new unit recently developed by Hearthaire Company, Cleveland. The unit may be installed in a wall of the living or other room, and may be fueled through the open fireplace or preferably through a rear center hopper-type fire door, or through two side or rear coal bins located in the adjacent room. The coal bins hold a total of ⅛ ton coal and feed by gravity into the rear of the grate by lifting a valve with the poker. The unit has two combustion chambers. Smoke from the fuel bed burning on grate passes up back of fireshield to the smoke hood through the radiator

SPARTA TILES

The private swimming pool, an adjunct of this Cynwyd, Pennsylvania, residence, is faced on sides and bottom with attractive 4 x 4 Sparta Blue Tile.

for

RESIDENCES AND SWIMMING POOLS

Apart from their well advised uses in residences, there is a growing recognition of the advantages afforded by the use of Sparta Ceramic Mosaic Tiles for lining swimming pools.

Quite important is the non-slip feature provided by a special surface texture. Sparta Tiles are sanitary, and are more rugged than competitive materials. There is no glare, for Sparta colors are soft in tone and the tile surfaces dull. Many colors and patterns are available, affording a rare opportunity for individuality and pleasing effects.

And with all this, Sparta Tiles are low in cost. Installation, too, is made more economical, for Sparta Tiles are supplied *mounted* in sizes including 4x4, and are set permanently and inexpensively by the *floating* method.

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IN THIS

KELVIN HOME

All Window and Exterior Door Frames are Calked with

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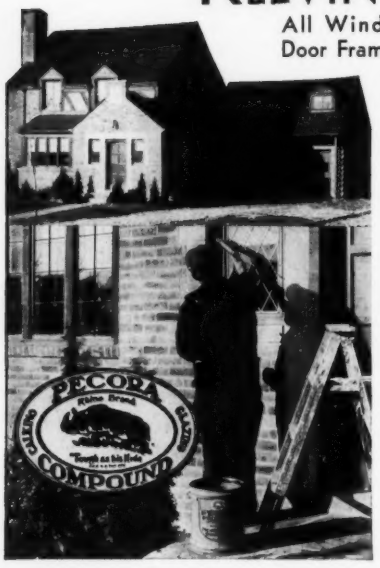


This Kelvin Home in Birmingham, Michigan, was built according to working plans and specifications rendered by J. Ivan Dise, Architect, from the original Kelvin Home design developed by Kelvinator Engineers. Kelvin Home is the first moderate cost home embodying year round air-conditioning and a completely electrified kitchen.

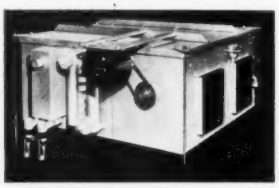
Pecora Calking Compound is widely used for air conditioning projects because of its reliability in not only preventing the infiltration of dirt, dust and outside air, but also as an important aid in preventing heat losses.

For further details see Sweet's Catalogue or write direct to us.

PECORA PAINT COMPANY
318 VENANGO STREET PHILADELPHIA, PA.
Member of Producers' Council, Inc.
Established 1862 by Smith Bowen

to enter the front of the hood where with the smoke from the front open grates, it passes into any smoke pipe to a superimposed or detached chimney. All walls of both combustion chambers are direct-fire-contact heating surfaces. Smokeless combustion obtains in the rear combustion chamber. Return air is filtered through an "airmaze" filter and is forced by circulators or by convection to the necessary elements. As it encircles the water pans over the radiator the air is properly humidified and passes out through any grilles into the room the unit faces, and into any number of risers or ducts to adjacent or upper room grilles. An insulated hearth is used when the unit is set directly over a wood floor. If desired, any brick, marble or wood mantel may be used as a facing. **796M**

ALL-YEAR UNIT AIR CONDITIONERS

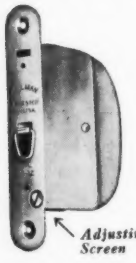


A complete line of unit air conditioners built in 3 to 15-ton capacities for combined air filtering, cooling, heating and humidifying, or for heating or cooling only, has been announced by Fedders Mfg. Company, Buffalo. Fedders all-copper coil surface, for use with refrigerant, cold water, steam and hot water, is used. Tubes are scientifically manifolded for correct distribution. Manifolds are located on the outside of cabinet, providing easy access to inlet and outlet connections for piping. Humidification is by means of a self-cleaning nozzle which ejects a fog into the air stream. Operation of the humidifier can be controlled either manually or

New!

PULLMAN
ADJUSTABLE
SASH BALANCE

A HALF CENTURY OF PROGRESS
Established 1886



Patented August 18, 1936

PULLMAN MFG. CORPORATION
1175 University Avenue
ROCHESTER, N. Y.

★ THE old fashioned, unsightly sash weight and cord have at last given way to the adjustable spring Sash Balance —the most radical and important improvement in Sash Balances in forty years.

Fits any window; tension of the inside coiled spring can be adjusted by using an ordinary screwdriver on one Adjustable Screw. Insures quiet, easy operation, impossible with any other type of Balance.

Pressed steel construction; light and non-breakable. All working parts are forever sealed, to keep trouble out. Double-hinge opening completely installed in 10 minutes. Pullman Adjustable Sash Balances are guaranteed for the life of the building.

Write for further specifications and details.

Burrowes Rustless Screens
CUSTOM MADE FOR EVERY USE

For the small house in the country, just as in towering public buildings, architects are specifying Burrowes Rustless Screens. They know that today, as in 1873, custom-made Burrowes Rustless Screens will give trouble-free service through the years.

THE *Burrowes Corporation*
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BURROWES SCREENS RUSTLESS ALL CITIES

"Standard" PLUMBING FIXTURES COST NO MORE THAN OTHERS

Pat. No. 1,844,988

Styles have changed

IN BATHROOMS, TOO!

With a "Standard" NEO-ANGLE bath

NEW FREEDOM of design—new arrangements of fixtures—new styles in decoration—have come to the bathroom since "Standard" introduced the Neo-Angle Bath. Never before has a new fixture won such popular approval and offered such unlimited opportunities for original planning as this sensationally different square bath.

The Neo-Angle is only four feet square yet it provides roomy, full-size bathing space, convenient seats in two opposite corners and a shower bath. It adds new beauty and charm to any decorative effect at the same time providing exclusive bathing features that appeal to the whole family.

Whether your homes are large or small, you can use the Neo-Angle Bath to give you distinctive, modern bathrooms that everyone will admire. Consult your "Standard" catalogue or write for literature on the "Standard" Neo-Angle Bath.

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"Life is too precious to endanger it by entrusting Plumbing to hands other than those best qualified to assure Health Protection—the Master Plumber."

Henry W. Reed.
President

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

automatically. Provision is made for adding the humidifying unit at any time if it is not required on the original installation. Centrifugal blowers, driven by V belts, move air with a minimum of sound. Motor bracket is provided for standard motors. Filter section containing double filter of the removable type is protected with access plates for easy replacement of filters. **797M**

ELECTRICAL

SYMMETRICAL ANGLE REFLECTORS

Westinghouse 250-watt Symmetrical Angle Reflectors are designed especially for use with high intensity mercury lamps. They provide illumination where intensive local lighting of vertical and horizontal surfaces from the side is required. The reflector, with diffusing glass cover, is designed to give a wide spread of distribution of light horizontally and an even distribution of light from top to bottom of the vertical surface. The reflector is drawn from 24-gauge iron sheet. One ground coat of porcelain enamel is applied all over and two coats of white porcelain enamel inside and one green coat outside the black bead provide the reflecting surface and covering. The acid-etched glass cover is hinged directly to the reflector bead, supported at three points. It is released by unsnapping two latches. A heavy waterproof felt provides a gasket between reflector and lens. These reflectors are manufactured by Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. **798M**

QUINTUPLE-PURPOSE CABINET SHOWER

Described as a cabinet shower for every member of the family, the new quintuple-purpose unit recently introduced by Henry Weis Mfg. Co., Inc., Elkhart, Indiana, contains a special shower for the growing child, a gentle spray for the baby, a shower for the elderly person, and a special foot shower, in addition to the conventional shower for the adult. A feature of the cabinet is that it has two shower heads. The upper head is placed at the normal height of six feet above the receptor. The lower is placed four feet above the receptor. A diverter valve with indicator permits the bather to direct the water at will as desired. A hose spray may be attached to the lower shower head fitting for use in bathing an infant in the cabinet. For this purpose, the cabinet is equipped with a special lightweight canvas shower hammock. The non-skid receptor is of vitreous porcelain enamel. **799M**

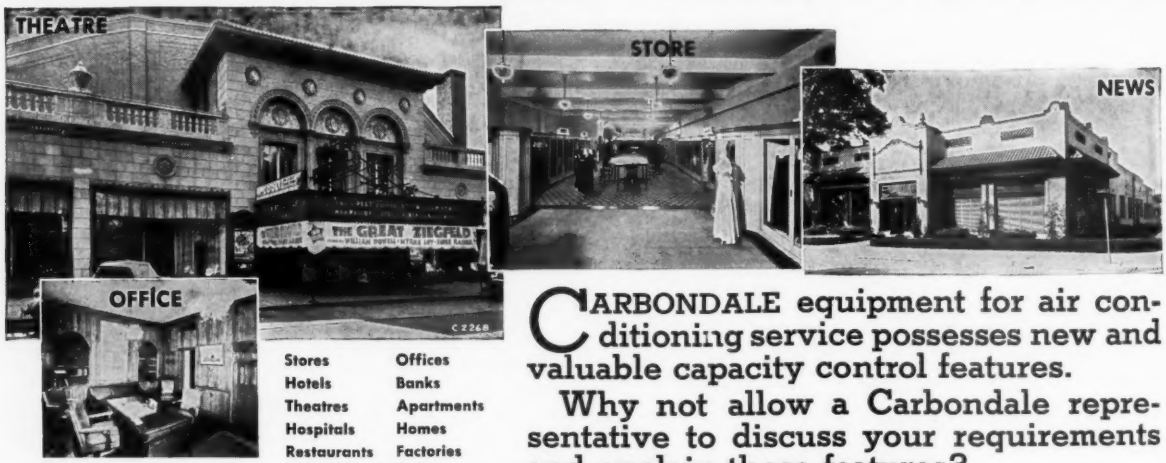
MISCELLANEOUS

SPRING SASH BALANCE

A new adjustable device, which permits changing tension of the inside coiled spring without removing the unit from the window, features the new Pullman Unit Sash Balance. Adjustment is made by turning the screw to the right to strengthen the spring and in the opposite direction to weaken it. This self-contained unit—embodying weight, cord and pulley—is of all pressed steel construction, light in weight and non-breakable. It is guaranteed for the life of a building, and is manufactured by Pullman Mfg. Corporation, Rochester, N. Y. **800M**

More typical examples of

CARBONDALE AIR CONDITIONING



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Hotels Banks
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Public Buildings

CARBONDALE equipment for air conditioning service possesses new and valuable capacity control features.

Why not allow a Carbondale representative to discuss your requirements and explain these features?

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A roof of Barrett Broad Shadow Shingles adds to the appearance of any house . . . and provides the owner with years of expense-free, trouble-free roof protection.

Combining Low-cost Protection, Fire-safety and Enduring Beauty

Barrett SHINGLES

The fire-safety, weather protection, low initial cost and low-cost-per-year of service of asphalt shingles is well recognized by home-owners and architects. In Barrett Broad Shadow Shingles these features are combined with unusual beauty.

These good-looking, modern shingles have a *built-in* shadow band which accents heavy shadow lines on the roof.

Barrett Broad Shadow Shingles are the result of Barrett's 83 years of roofing experience "Between the World and the Weather." Get acquainted with these efficient shingles and you'll recommend them to your clients. They are available in a wide variety of attractive colors to suit every requirement.

We will gladly send you illustrated descriptive booklets giving full information. Address our nearest office.

THE BARRETT COMPANY

40 Rector Street, New York, N. Y.

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In Canada: The Barrett Company, Ltd., 5551 St. Hubert St., Montreal

TRENDS

(*Continued from page* 18)

expenditure of $12,000,000,000 in the next decade. Provision is made for a simplified mass service, governed by moderate fees, with no lowering of the professional standards.

According to Walter R. McCornack, chairman of the Institute's committee on housing, "the objective of this program is to make a definite start toward the solution of the small house problem, and find a common ground upon which the architect, lender, and builder can unite with government agencies in a wise forward movement." Mr. McCornack adds, "if the architect continues to ignore the single house and its owner, he will be forgotten when housing developments come."

THE ACTIVITIES OF TITLE I OF THE NATIONAL HOUSING ACT came to an end at midnight March 31st, 1937, after functioning for two years and seven months through the FHA. On the basis of figures recently released, a brief summary of its work is offered: From the beginning of operations, 1,419,453 modernization and repair notes were insured, amounting to $542,808,055, with returns still incomplete. Nearly one and one-half million properties were improved or modernized by insured loans, the majority of which went to people in very modest circumstances. Over a half billion dollars was divided among the building and allied industries, stimulating their activity. Through March 20th, insurance claims paid under Title I, less collections, repossessed properties and net amounts due on notes reinstated amounted to a loss ratio of less than 1 per cent. This amount is further decreased in consideration of the increased revenue flowing into the national Treasury from taxes paid by corporations and individuals, formerly "in the red," who derive their incomes directly or indirectly from the revived construction industry.

HOUSE OF LEE B. GALLOWAY, Forest Hills, L. I. William Paul LaValle, architect. Guyon C. Earle, builder, Forest Hills, L. I. ½ in. struck joints.

BEAUTY—PERMANENCE *with* Hudson River Common Brick

New York architects have been pleasantly surprised to discover the attractive results they can obtain with Hudson River Brick—their local brick. Likewise, architects in other communities will probably find their own local product offers equally pleasing possibilities.

Your local brick, if properly manufactured is, after all, an excellent facing material suitable for the finest of buildings. Every day more architects are discovering the answer to their masonry problem lies in their own back-yard.

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HUDSON RIVER COMMON BRICK

SHOWS AND FAIRS

WHAT WAS ANNOUNCED IN JANUARY AS A SHOW OF EXTRAORDINARY SIZE AND EXHIBITION RANGE, appears now to be America's first million dollar housing show, as well. We refer, of course, to the event being staged under the rules of the Manufacturers Housing Promotion Council, in co-operation with the FHA, to be held at Madison Square Garden from May 12th to 23rd.

Extremes in housing will be furnished by the "House of Tomorrow," costing an estimated $100,000, and the $2,150 low cost home designed by the FHA. In addition to the housing exhibits, there will be replicas of the present New York City Housing Authority projects under government supervision, the Williamsburg and Harlem River slum clearance developments; and exhibits by the leading manufacturers of building materials, equipment, furnishings and air-conditioning; and by real estate brokers.

THE NEW INTERNATIONAL AMPHITHEATRE IN CHICAGO will house another one of 1937's expositions, from October 4th to 9th. Attendance at the Chicago Exposition of Power and Electrical Engineering will be representative of one of the largest industrial areas in the United States. Executives, engineers, and operatives in practically all of the technical fields look upon such expositions as a market place for ideas which they can utilize with immediate results. These shows offer, too, an opportunity for the technical audience to calculate the direction of future trends.

The Exposition will bring to the middle West a comprehensive gathering of machinery, apparatus and instruments used in the generation, control, transmission and use of power. The principal

Easier to Specify
Sure to Satisfy

ALL-IN-ONE
QUIET MAY
HEAT-AN-AIRE CONDITIONER

COMPLETE in *ONE* cabinet, the QUIET MAY "Heat-an-Aire" Conditioner eliminates the difficulties of matching an oil burner to an unrelated furnace and air conditioner.

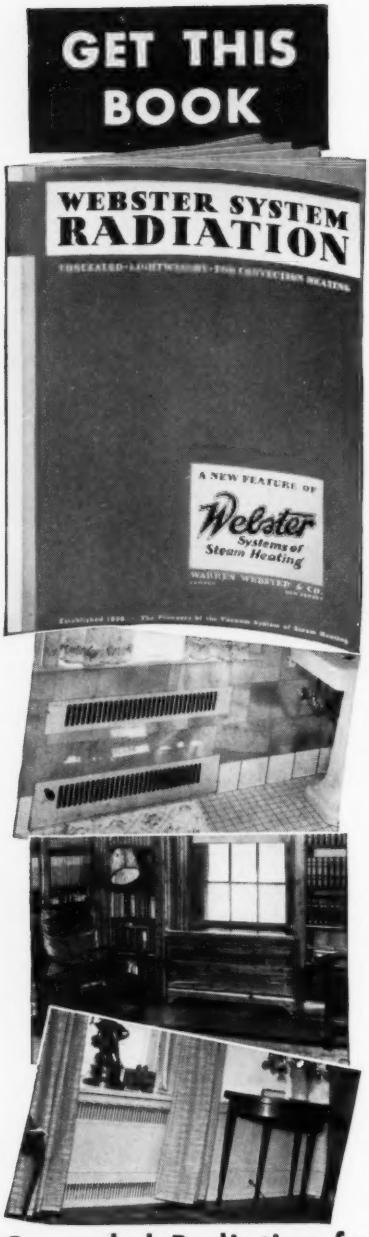
It is engineered for efficiency and ease of control. It offers the fullest modern range of services . . . a minimum of 180 gallons per hour of tankless domestic hot water; heat and conditioned air under controlled, forced circulation in winter; filtered controlled cool air circulation for summer . . . in a single, foolproof investment. It can supply warm air to some rooms, steam radiation to others in the same building if desired. It is adaptable for installation in either existing homes or in new construction.

This QUIET MAY unit has eye-appeal too. Its French gray and ebony cabinet will fit harmoniously into any basement or recreation room plan.

Write for the complete details of this precisely-engineered unit as presented in time-saver form in our illustrated folder, "All Lines Point to QUIET MAY." Factory engineering cooperation on any planning if desired.

Quiet May is Quality Made

MAY OIL BURNER CORPORATION
BALTIMORE, MARYLAND



Concealed Radiation for Convection Heating

If you contemplate building or modernizing you will want this book about concealed Webster System Radiation. It shows "out-of-the-way" concealed radiators to modernize interiors, harmonize with decorative schemes and increase available floor space. It tells how Webster System Radiation provides balanced heating service, eliminates "cold corner" rooms. Read about this feature of Webster Systems of Steam Heating. This fully illustrated book is yours for the asking. No obligation, naturally.

If you are interested in heating *new* buildings, or in improved heating service and lower heating cost in your present building, address WARREN WEBSTER & CO., Camden, N. J. Pioneers of the Vacuum System of Steam Heating Representatives in 60 principal U.S. Cities—Est. 1888

classifications of exhibits will include the following: Combustion, electric power generation and transmission, hydraulics, control, insulation, mechanical power transmission, materials handling, plant maintenance, and prime movers, including steam, gas, oil and Diesel engines.

Charles F. Roth, Vice president of the International Exposition Company under whose management the Exposition will be held, will be its general manager. All matters of contract and arrangements will be under his personal direction.

ART

DR. ROYAL FARNUM BAILEY, Director of the Rhode Island School of Design, suggested to the twenty-eighth annual convention of the Eastern Arts Association, recently, that they instruct their delegates to the 1937 Art Congress in Paris to announce indorsement of a proposal for the European governments to pay part of their war debts by the creation of art scholarships. The plan was originally offered by Dr. Bailey, who said that it might provide 15,000 scholarships of $2,000 each. It was estimated a billion dollars could thus be repaid in thirty years.

AT THE FORMAL DEDICATION OF THE NEW MELLON INSTITUTE, in Carnegie Hall on the afternoon of May 6th, addresses will be given by three Nobel prize-winners, according to an announcement by Dr. Edward R. Weidlein, Director of the Institute, who will preside. Dr. Irving Langmuir, chemistry; Dr. H. C. Urey, physical chemistry; and Dr. W. P. Murphy, medicine, will speak, and brief addresses will be given by Andrew W. Mellon and Richard K. Mellon, representing the Founders.

The Trustees' dinner will be held in the evening of the same day, among the speakers being Dr. Benjamin T. Brooks, Dr. Karl T. Compton, and Dr. F. C. Whitmore. A. V. Dacis, chairman of the board of the Aluminum Company of America, will be the toastmaster.

The new building of the Mellon Institute, which has taken six years to complete, is to be dedicated to science and humanity in honor of Andrew W. and Richard B. Mellon, founders. Visitors from many parts of the world are expected to attend the exercises because of the high position which the Institute has won in pure and applied research, and because of the unusual character of its new home, a truly modern workshop of science clothed in classic beauty.

SCHOOLS AND SCHOLARSHIPS

THE SIDEWALKS OF NEW YORK HAVE BECOME HISTORY BOOKS for the students of the New York University School of Architecture, under the terms of a prize competition sponsored by Mrs. Walter N. Rothschild and Aymar Embury II. They have posted $250 in four prizes in a competition to encourage the study of architecture of given periods as exemplified by buildings in New York City.

Each contestant must submit sketches and comments on historically correct examples of Greek, Roman, Romanesque, Gothic, Italian Renaissance, English Georgian, and American Colonial architecture. The sketches must indicate the characteristics of the period, its individual motives and ornaments. They must also comment on the character, accuracy, and aesthetic feeling of each of the copies. Prizes of $100, $75, $50, $25 will be awarded by jurors who are not connected with the school.

COLUMBIA UNIVERSITY HAS JUST COMPLETED a series of slides to be used in the regular lecture routine on housing. The slides were made from the large WPA portfolio of photographs and floor plans of various types of housing in countries all over the world.

It was also announced that the Creative Home Planning Division of WPA will further contribute to school education through the inauguration of a special service to high schools and colleges, by supplying them with measured drawings of period furniture, to supplement courses in interior decorating.

THE APPOINTMENT OF PROFESSOR LEOPOLD ARNAUD as dean of the Columbia University School of Architecture was announced on April 11th by Dr. Nicholas Murray Butler, president of the University. Professor Arnaud, who has been acting dean for more than a year, succeeds Joseph Hudnut, who resigned to become Dean at Harvard.

Under Professor Arnaud and his associates the Columbia School's educational program has undergone extensive development. The teaching plan has been reorganized, new fields have been opened in University Extension, and town planning, with Sir Raymond Unwin in charge of a studio, has become a major activity. Steps have been taken to widen opportunity for architectural training, emphasizing creative design and sound science.

Professor Arnaud was born in New York City on March 2, 1895, and was educated at the Lycee Janson de Sailly, and the University of Paris, from which he was graduated in 1914. During the World War he was an artillery officer in the Rainbow Division. Later, as first lieutenant he served on the staff of General George Allen. Returning to his architectural studies after the war, he was graduated from Columbia in 1919, and received a diploma from the French Government in 1924. From 1924 to 1931, Professor Arnaud was engaged in architectural practice in New York. In 1927 he began teaching in the University Extension at Columbia. He received the degree of Master of Science from Columbia in 1933.

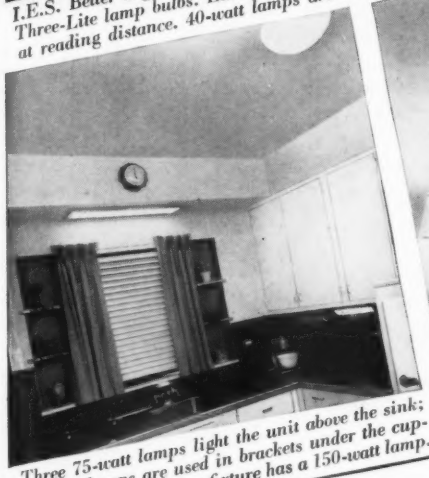
It's easy to plan

MEASURED LIGHTING FOR EVERY HOME YOU DESIGN . . .

I.E.S. Better Sight lamps in this room are equipped with MAZDA Three-Lite lamp bulbs. Each lamp provides 25 footcandles of light at reading distance. 40-watt lamps are used in the ceiling fixture.

This ceiling fixture has a 150-watt lamp. Four side-wall brackets each contain a 40-watt lamp.

This breakfast room is lighted with an inner diffusing bowl fixture containing a 100-watt lamp.



Three 75-watt lamps light the unit above the sink; 40-watt lamps are used in brackets under the cupboards; and the ceiling fixture has a 150-watt lamp.

Adjustable wall lamps over the beds are each equipped with a 100-watt lamp. The ceiling fixture has three 60-watt lamps which help provide additional general room illumination.

30-watt MAZDA Lumiline lamps provide seeing comfort at the bathroom mirror.

LIGHT SENSITIVE CELL

The General Electric Light Meter measures light as simply as a thermometer measures temperature. The face of the meter is marked to indicate illuminations for different types of seeing tasks. Costs only $11.50.

THERE'S a new technique in home lighting today . . . a technique that completely outmodes older types of lighting and lighting fixtures because it is based on a new idea, the Science of Seeing.

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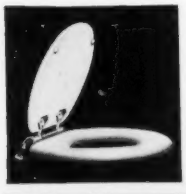

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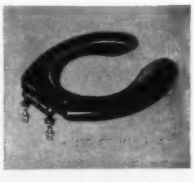

CHURCH Sani SEATS

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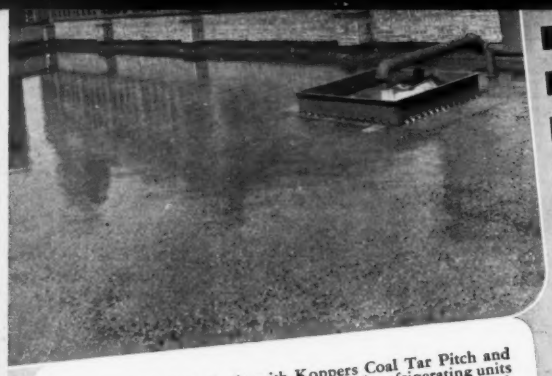

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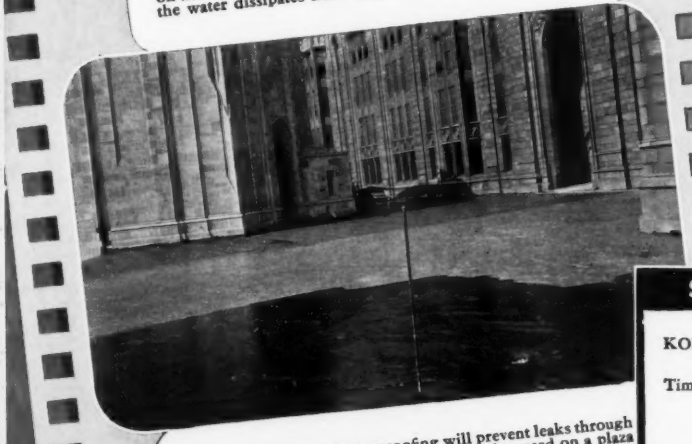

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